

# THE IRON AGE

A Review of the Hardware, Iron, Machine and Trades.

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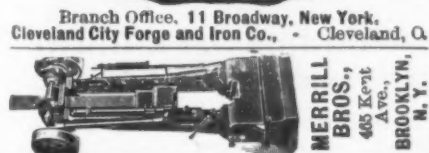
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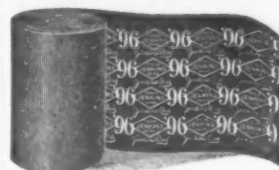
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SEE  
PAGE 24.



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# THE IRON AGE

THURSDAY, JUNE 18, 1903.

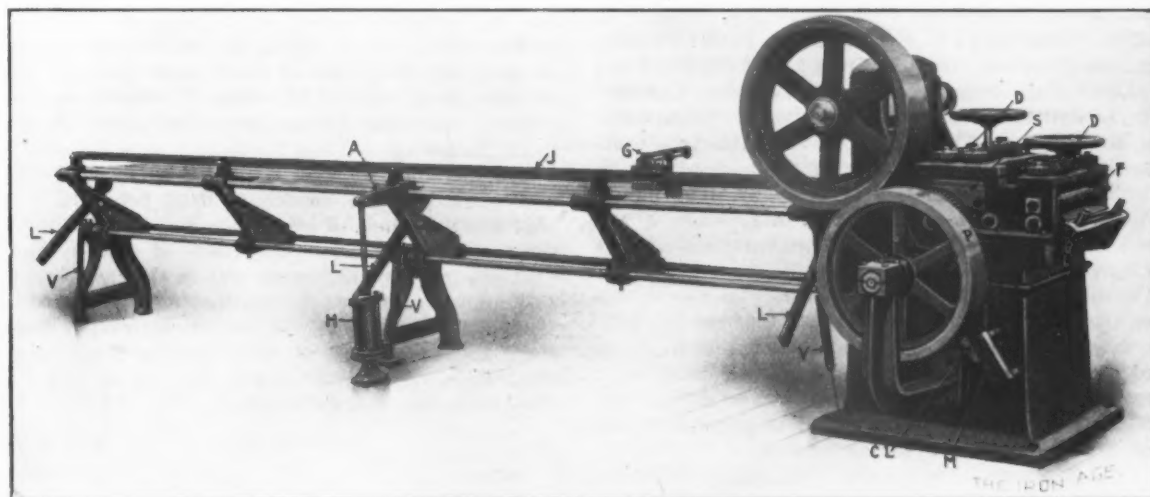
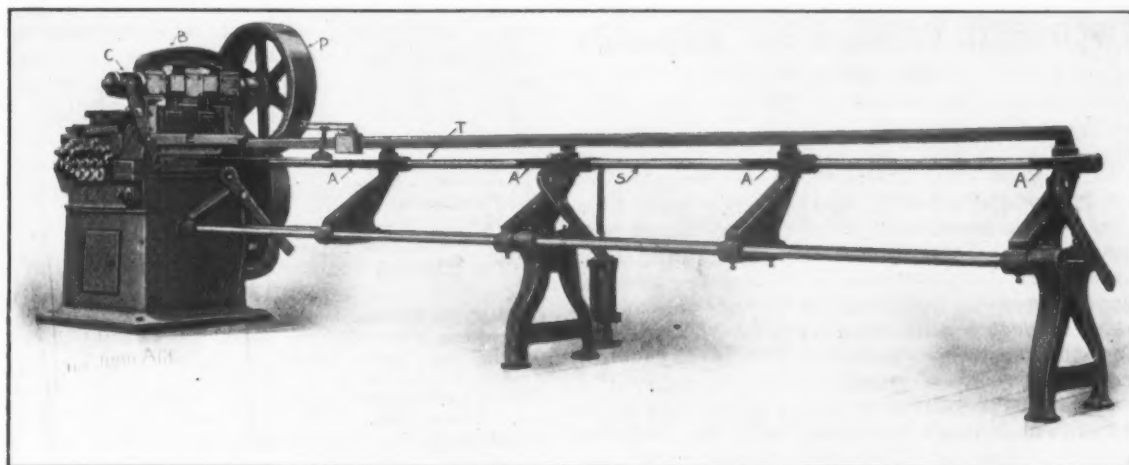
## The Shuster Sheet Metal Straightening and Cutting Machine.

The F. B. Shuster Company of New Haven, Conn., are building a new sheet metal and strip stock straightening and cutting machine, which is shown in the accompanying illustrations. The machine is designed to take sheet metal from the coil and straighten and cut it to length. The maximum width of metal that it will handle is 14 inches, which it will cut  $\frac{1}{8}$  inch thick, which is the equivalent of stock  $8 \times \frac{1}{4}$  inch, which is the maximum capacity in thickness.

The operating parts of the machine consist of feed

which is adjusted for length of cut by sliding it along the bar J to the desired position.

The method of operation of the machine is as follows: The sheet metal passes through the rolls and under the cut off press, and runs out upon the table T until it strikes the swinging part of the stop gauge G. An electric contact is made here which completes the circuit through the electric latch M. This releases the clutch lever C L, which operates two clutches simultaneously. One clutch is released and the other clutch is engaged by this movement of the lever. This section respectively serves to stop the rolls and to start the cut off press, which on completion of one revolution resets the clutch lever by



THE SHUSTER SHEET METAL STRAIGHTENING AND CUTTING MACHINE.

rolls, F, and a train of straightening rolls, S, all geared together and driven by pulley, p. The adjustment of both feeding and straightening rolls is obtained by means of the hand wheels on top and gearing at D, which operate the adjusting screws engaging with the roll shaft boxes. The cut off press B is driven direct by pulley P, Fig. 2. On the other end of the press shaft is a cam, C, that depresses the table T when the cut off press is put in action. The table T is supported by arms A on shaft S, which is connected by the bar E to the cam lever L, which is operated by the cam C. To the shaft S is attached an arm with a piston rod and air cushion cylinder at H.

The levers L have rolls on one end bearing against the under side of the arms A, and the other end is kept under strain by heavy springs, V. At G is the stop gauge,

means of cam C, thereby starting the rolls again. The table T is depressed quickly to an angle of 45 degrees by the cam as the cut off press shaft rotates and is held in the down position long enough for the cut off piece of metal to slide onto a truck or the floor. All pressure is then suddenly removed from the lever L, and the force of the springs attached to the levers L causes the table to return very quickly to its horizontal position. There is no shock in stopping the table, however, because the air cushion cylinder brings the table to a gentle stop.

For cutting stock 36 inches in length or less, and not over 6 inches in width, the bar E is disconnected from the lever L and the table T is allowed to drop to its lowest position. A stationary guide bar 36 inches long is supported by suitable arms clamped to the shaft S, and one edge of the metal running out upon this bar strikes

the stop gauge, which causes the machine to operate the same as before, with the exception of working the table. The cut off piece of metal in falling strikes against the slanting face of the table and is thrown off to one side of the machine as formerly. If it is desired to handle stock less than 3 inches in width two long parallel guides are provided, between which the metal runs out over the table. The lower guide is attached to the table and the upper guide is supported by arms from the bar J. The stop gauge has for this case projecting fingers to straddle the upper guide, which is also used with this combination. The operation of the machine is the same as for the first case described.

An additional feature of the machine, which is not shown in the engravings, is a mechanism actuated by a lever which extends to the operator's side of the machine to instantly open the clutch on the roll driving pulley, thereby stopping the rolls if metal should get caught and without engaging the clutch on the cut off press, as would be done if the automatic trip was used in such an emergency.

### The Schwartz Furnace for Malleable Cast Iron.

At the works of the Hawley Down Draft Furnace Company, Superior and Townsend streets, Chicago, on June 12, an interesting demonstration was made of the adaptability of the Schwartz furnace to the melting of iron for malleable castings. This furnace, which was illustrated and described in *The Iron Age* of March 12, 1903, resembles in appearance a Bessemer converter, swings on trunnions, and melts its charge by means of a blast of oil and air delivered through two tuyères. The oil is discharged through orifices  $\frac{1}{8}$  inch in diameter in the end of each tuyere. The demonstration referred to was made in the presence of a number of members of the American Foundrymen's Association who were returning from the convention at Milwaukee. Those present comprised H. P. G. Norstrand, general manager of the company; Dr. Richard Moldenke, secretary of the American Foundrymen's Association, New York City; Stanley G. Flagg of Philadelphia; H. E. Field of the Farrel Foundry & Machine Company, Ansonia, Conn.; J. D. Stoddard and E. J. Lane of the American Radiator Company, Chicago; Harry L. Bell of the Dodge Mfg. Company, Mishawaka, Ind.; Mr. Burgess of the American Malleable Iron Company, Chicago; Frank M. Etting of Philadelphia; F. S. Cadwell of the Michigan Heater Company, Big Rapids, Mich.; J. N. Beckett of the Illinois Axle, Skein & Nut Lock Company, Pana, Ill., and representatives of *The Iron Age*.

The demonstration, which was entirely successful, was under the direct charge of Mr. Norstrand, but the mixture was arranged by Dr. Moldenke. The charge consisted of 1000 pounds, composed of 600 pounds of No. 2 charcoal pig iron, taken because of its low silicon; 325 pounds of Stewart coke pig iron and 75 pounds of steel scrap. The pig iron analyzed as follows:

|                       | Charcoal<br>pig. | Coke pig. |
|-----------------------|------------------|-----------|
| Silicon .....         | 0.89             | 1.05      |
| Graphitic carbon..... | 3.06             | 3.00      |
| Combined carbon.....  | 0.65             | 1.18      |
| Phosphorus .....      | 0.283            | 0.045     |
| Sulphur .....         | 0.018            | 0.022     |
| Manganese .....       | 0.69             | 0.17      |

The furnace having been heated by a preliminary melting, the new charge was thrown in cold, with the steel scrap on the bottom to retard its oxidation. Blast was turned on at 10.10, the pressure being  $1\frac{1}{2}$  pounds for the first hour and 2 pounds afterward. During the process of melting the furnace was occasionally tilted forward or backward to facilitate the operation. Beginning at 10.45, test bars were taken off at intervals to note the progress of the melting. At 11.45 the converter was tipped and the contents poured into ladles. The test bar then taken showed the characteristic white color of iron for malleable castings. The net yield of metal was 940 pounds, showing a loss of 60 pounds, or 6 per cent. The operation of the furnace showed that very little refining occurred during the melting, thus permitting the charge

to be made of the precise character desired in the product. All were highly pleased with the result.

The Schwartz furnace has grown in favor rapidly in brass foundries in the short time which has elapsed since it was brought out. A catalogue recently issued gives the names of over 80 manufacturing establishments in which it is in use for making brass and other alloy castings. Some of them are using a number of furnaces, additional orders having been placed after a successful trial of the first one installed by them. They have also been introduced abroad, several now being at work in England and Belgium. Successful efforts are being made to secure a footing for the furnace in the manufacture of iron and steel castings. Several furnaces are now in use in the production of gray iron and malleable castings, and an order is being filled for one to make steel castings. The furnace is peculiarly fitted for the use of those who desire to make special castings, in the operation of which it is exceedingly desirable to employ fuel free from deleterious elements and to secure a perfectly controllable heat, both of which advantages are realized in this process. The manufacturers of the furnace, however, look for a wider field, believing that foundrymen will find it suitable for their use on regular work. Drillings from steel test bars made in the furnace were submitted to Robert W. Hunt & Co., Chicago, who reported the following analysis:

|                      |       |
|----------------------|-------|
| Silicon .....        | 0.70  |
| Sulphur .....        | 0.047 |
| Phosphorus .....     | 0.098 |
| Manganese .....      | 0.48  |
| Carbon by color..... | 0.44  |

The physical test showed the following result:

|  | No. 1.                          | No. 2.        |
|--|---------------------------------|---------------|
| Original dimensions, inches.....       | 1.014 x 1.023                   | 1.009 x 1.014 |
| Dimensions after fracture, inches..... | 1.004 x 1.010                   | 0.961 x 0.947 |
| Original area, square inches.....      | 1.037                           | 1.023         |
| Fractured area, square inches.....     | 1.014                           | 0.928         |
| Elastic limit, pounds, actual.....     | Broke before<br>yielding point. | 66,000        |
| Maximum load, pounds, actual.....      | 68,000                          | 101,200       |
| Elongation in 8 inches.....            | .....                           | 0.750         |
| Elastic limit per square inch.....     | .....                           | 64,520        |
| Tensile strength per square inch.....  | 65,590                          | 98,820        |
| Per cent. elongation in 8 inches.....  | .....                           | 9             |
| Per cent. reduction of area.....       | 0.022                           | 0.092         |

The charge from which the above steel was made consisted of 400 pounds of Stewart pig iron, 800 pounds of steel plate scrap, 50 pounds of silico-spiegel and 8 pounds of ferromanganese, and was 1 hour 50 minutes in the furnace.

Another heat of steel made consisted of 350 pounds of Stewart pig iron containing 0.035 per cent. of phosphorus, 819 pounds of steel plate scrap containing 0.045 per cent. of phosphorus, 40 pounds of silico-spiegel and 8 pounds of ferromanganese; was in the furnace 2 hours 30 minutes; consumed 73.4 gallons of crude oil; yielded 783 pounds of test bars and perfect castings, or 64.34 per cent., and 360 pounds of scrap, and the analysis of the steel, as made by Wm. Brady, chemist of the Illinois Steel Company, was as follows:

|                  |       |
|------------------|-------|
| Sulphur .....    | 0.053 |
| Phosphorus ..... | 0.12  |
| Silicon .....    | 0.07  |
| Manganese .....  | 0.17  |
| Carbon .....     | 0.52  |

The report of a malleable iron test made by A. P. Ford of the Crane Company, Chicago, is as follows:

"I give you herewith the results of the test made with a view to making malleable iron in a Schwartz furnace. The mixture, as you know, was made of 70 per cent. malleable Bessemer pig, of which you know the analysis, and 30 per cent. of soft steel scrap. The two 1 inch square bars that were cast were annealed and broken in the tensile machine, showing a strength as follows: Bar No. 1, 39,670 pounds; No. 2, 35,760 pounds. The analysis of the No. 1 bar was as follows:

|                       |       |
|-----------------------|-------|
| Silicon .....         | 1.19  |
| Manganese .....       | 0.11  |
| Sulphur .....         | 0.044 |
| Phosphorus .....      | 0.22  |
| Graphitic carbon..... | 2.71  |
| Combined carbon.....  | 0.13  |

"The flat bars, which were annealed, proved to be quite tough and malleable. The above strength is within the limits of good malleable iron. When it is considered

that this is practically the first trial, with no previous experience to be guided by, it would seem that the successful production of malleable iron in this furnace is entirely practicable."

The analysis of Bessemer pig iron used in the above test, which analysis was made from random selections from a carload, and not from a selection of iron for the test, is as follows:

|                        |       |
|------------------------|-------|
| Silicon .....          | 2.19  |
| Manganese .....        | 0.28  |
| Sulphur .....          | 0.014 |
| Phosphorus .....       | 0.17  |
| Graphitic carbon ..... | 3.76  |
| Combined carbon .....  | 0.52  |

Accepting the tests made as proving that malleable cast iron can be satisfactorily produced in this furnace, the question of repairs presents a strong claim in its favor. The statement is made on the authority of practical malleable foundrymen that the repairs necessary in the operation of an air furnace or an open hearth furnace run from 90 cents to \$1 per ton on the output of castings, while the repairs on the Schwartz furnace, it is claimed, would be only 10 to 15 cents per ton.

The furnace used in the demonstration on June 12 was the size classified by the company as No. 3, having a shell 60 inches in diameter. They recommend for the production of malleable castings on a commercial scale their No. 4 furnace of 75 inches outside diameter and 3000 pounds capacity per heat, or No. 5 of 90 inches outside diameter and 6000 pounds capacity.

### Indexing and Filing Current Literature.

BY H. R. MACMICHAEL, PUEBLO, COL.

One of the serious problems that confront the progressive engineer and manager is keeping in touch with the rapid advances everywhere made to-day. Our technical and trade magazines present so much that is valuable that, trusting to memory, one idea crowds out another, or making a few notes, most of them are forgotten or cannot be found. To take the best magazines of his trade or profession, to absorb the salient ideas, to index and file systematically the valuable matter, eliminating the worthless, is to go far toward solving the problem and to add much to the worth of the man. The index and file store the ideas of others; the notebook may care for one's own ideas and observations.

#### Index.

The index in advance of all others is the card index. It is convenient to have cards printed to suit the requirements of the person. A form here shown has proved useful. At the top is the general subject, and the cards are filed alphabetically according to this. Sometimes the subject of interest forms only a small part of the article, in which case the title would be misleading. Titles frequently do not permit of alphabetical filing anyhow.

|  |  |                 |  |          |
|--|--|-----------------|--|----------|
| PUBLISHED.                               |  | - Steel Works - |  | FILED.   |
| Jan. 1-8-'02                             |  | LIBRARY.        |  | 2-12-'02 |
| TITLE                                    |  | A 176-          |  |          |
| Carnegie Steel Co.                       |  | AUTHOR          |  |          |
| PUBLISHER.                               |  | Iron Age        |  |          |
| Index maps & descriptions                |  |                 |  |          |
| I - O. H. Platt                          |  |                 |  |          |
| Blowing mill                             |  |                 |  |          |
| 1st Model on Continuous Mills } 9 pages  |  |                 |  |          |
| II - The Portland Cement Mills - 2 pages |  |                 |  |          |
| DESIGNED BY H. R. MACMICHAEL.            |  |                 |  |          |

Opposite "Library" comes the index number or place where the article may be found. Then follows title and author. After "Publisher" is placed name of magazine or publisher of book. Under "Published" at upper left hand corner is placed date of publication and at upper right hand corner may be placed date filed, if desired. This still leaves a liberal space for notes. Length of ar-

ticle, illustrated or not, and character of matter are useful.

#### Filing Magazines and Papers.

When only one or two magazines are taken they may be bound at small expense and will make a handsome addition to a library. This is perhaps the best method where bulk does not forbid, but for most men it is almost impossible to care for the material soon accumulated when several papers are taken. To overcome this difficulty was devised the following system:

All articles of interest are torn out, care being taken to tear evenly and close to back of page. A combination tool which punches holes and stamps in eyelets is then used to bind the pages together. The article is then given a number, or, better still, a letter and number, the letter indicating the size of sheet (9 x 12 inches, &c.), and the numbers are run consecutively for each size. Thus "A" might indicate size of sheet same as *The Iron Age*, and "A-73" written on index card would show just where to find article. Several articles may be bound with same eyelets (as is frequently necessary, two articles touching same page) and all given one number, which would then appear on the different cards. It is sometimes desirable to file articles on the same subject together, which may be done at any time by rearranging without changing index. Or if some of the articles to be changed are fastened with eyelets to articles on different subjects, the odd articles would have to be re-indexed by marking on cards their new locations, as "A-21" with "Blast Furnace Construction," supposing "A-21" to be on foundry operations.

It is best when volume contains a regular number of pamphlets to close it and start a new one. It may be neatly finished by cutting out heavy paper covers, stamping eyelets in same and binding all together by passing string through eyelets. Care should be taken to punch all sheets of same size alike. For this purpose a pattern of paper or, if at hand, thin tin should be used.

By the above methods a 2-foot pile of worthless paper may be reduced to a few inches of material invaluable for reference and available at a moment's notice.

#### Notebooks.

A notebook is something nearly every one keeps, or tries to keep; but the numbers discarded or forgotten bear witness to the necessity of careful system. Ease of inserting notes under any heading is a prime requisite. This is best obtained by the loose leaf notebook, of which there are several kinds to choose from. The book should be indexed by a separate index page for each letter, and the loose leaves may then be inserted between these pages at any desired point. Notes roughly made may be kept for a convenient time, when an hour or so will suffice for entering a number of them.

This completes a system the cardinal points of which are simplicity and flexibility—simple, so that an evening with everything at hand will take care of a month's reading matter; flexible, so that it can be expanded or rearranged, or (not the least advantage) contracted by destroying matter which proves worthless.

With a little practice the leading points in an article may be rapidly picked out and the burdensome details made available for use at the proper time, thus securing maximum efficiency with minimum expenditure of time and energy.

**The United Galvanizing Company.**—Geo. McNaul & Co.; the Federal Galvanizing Company, Limited, and the Standard Galvanizing Company, all of Philadelphia, have consolidated, and will on and after July 1, 1903, operate under the name of "The United Galvanizing Company," the corporation having been formed under the laws of Pennsylvania, with the following officers: Geo. McNaul, president; H. J. Maroney, vice-president; Chas. P. Horr, treasurer, and G. Eugene Harlem, secretary. A new plant is now being erected at 525-529 Front street, in that city, extending through to and including the present plant of Geo. McNaul & Co., at 520-524 Beach street, which when completed will be one of the most thoroughly equipped plants in the country.

### Some English Milling Machine Methods.

We take the following article from the *Engineer* as illustrating milling machine practice in a well-known British establishment building machine tools:

Through the courtesy of Alfred Herbert, Limited, we

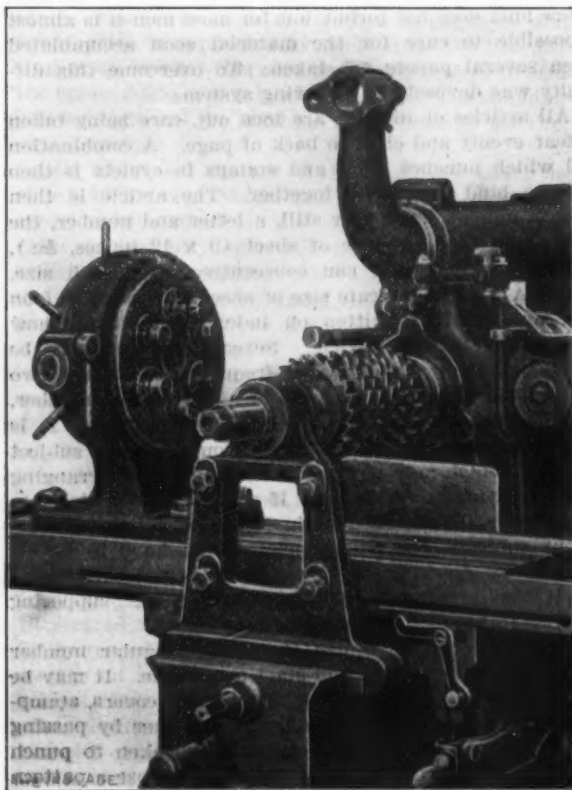


Fig. 1.—Milling Hexagon Nuts.

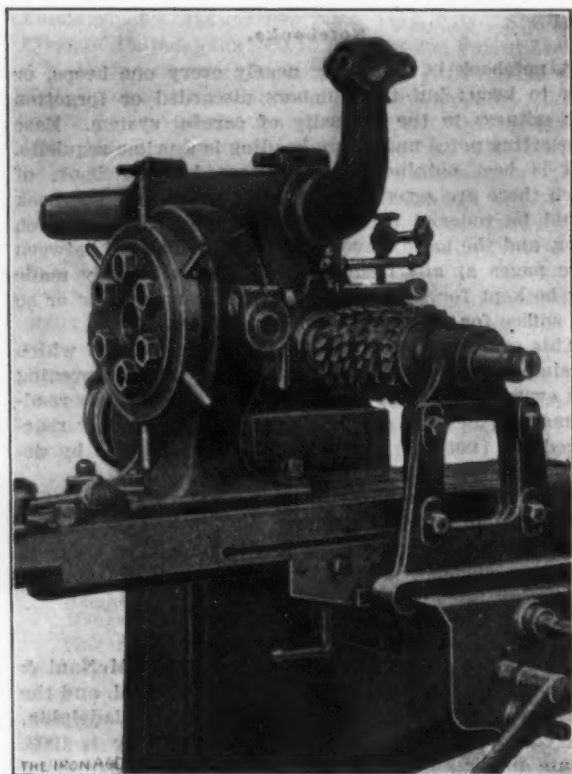


Fig. 2.—Milling Hexagon Nuts.

gather from the various points and excellences or otherwise of the machines. We are enabled to give also particulars of the material operated on, the feed and speed, depth of cut and nature of cutter for each example illustrated. We give also the amount of cut taken by each tooth of the cutter, and it will be observed that in the majority of cases the amount is astonishingly small. Even when doing what is generally regarded as heavy milling, the actual size of the chip is in no wise comparable with what can be done in a lathe or planing machine. Possibly this fact points to the conclusion that the limits of the possibilities of the milling machine are yet far from being attained. Whether they are worth attaining from an economical point of view is a question which we discuss elsewhere.

Before touching on the illustrations before us we must ask our readers to observe that only ordinary, everyday work is under consideration. There is little doubt that the figures could be beaten if the making of a record were in view. But records are made under exceptional conditions, frequently very uneconomical conditions. If the question of regrinding the cutters were neglected, and the work timed for short intervals only, it is probable that a very considerable increase in output might be realized. We insist on this point, because we are convinced that the figures given are all the more valuable because they are in no sense exhibition figures.

Figs. 1 and 2 are two views of an apparatus for milling the heads of hexagon bolts and nuts. The heads are milled by means of six cutters mounted upon an arbor, each pair of cutters acting upon two sides of a different bolt head. By the time that the three bolts have passed the three lower positions in the fixture the whole of the six faces are milled, and at each operation of the machine a finished bolt is produced. The milled bolts are taken out and blanks inserted in the uppermost chuck while the machine is operating. The method is familiar, being an application of a principle which has been extensively used in watch and clock machinery, where it is

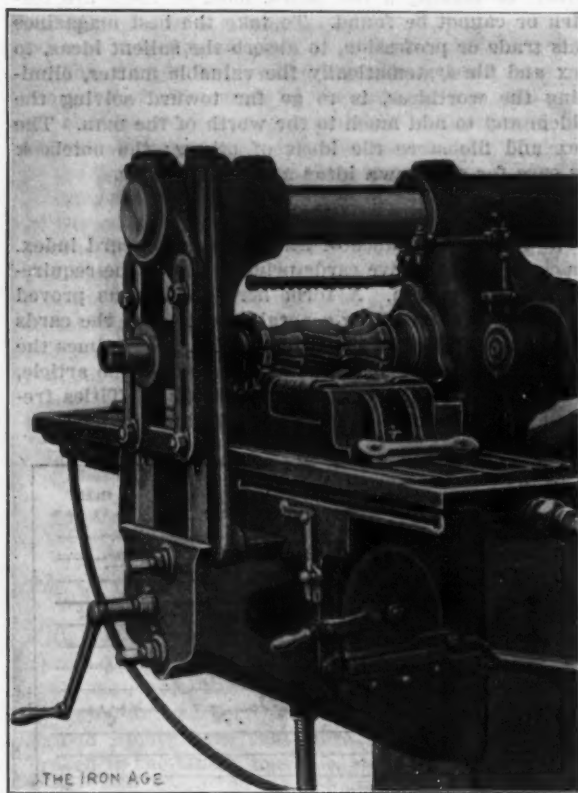


Fig. 3.—Milling Links.

### SOME ENGLISH MILLING MACHINE METHODS.

are enabled to put before our readers a series of photographs illustrating several milling machine operations. The prominent feature of the engravings is the work which is being done and the way of doing it, apart alto-

desired to perform a series of operations upon the same piece of work, the whole series only occupying the time of one operation. The cutters are made of ordinary tool steel and are 6 inches in diameter, having 36 teeth and

running at 46 turns, equal to 72 feet per minute. The feed is  $\frac{1}{2}$  inch per minute, equal to an actual cut of 0.0003 inch per tooth. The output is 35  $\frac{1}{8}$ -inch bolts per hour.

Fig. 3 shows a milling machine arranged for form

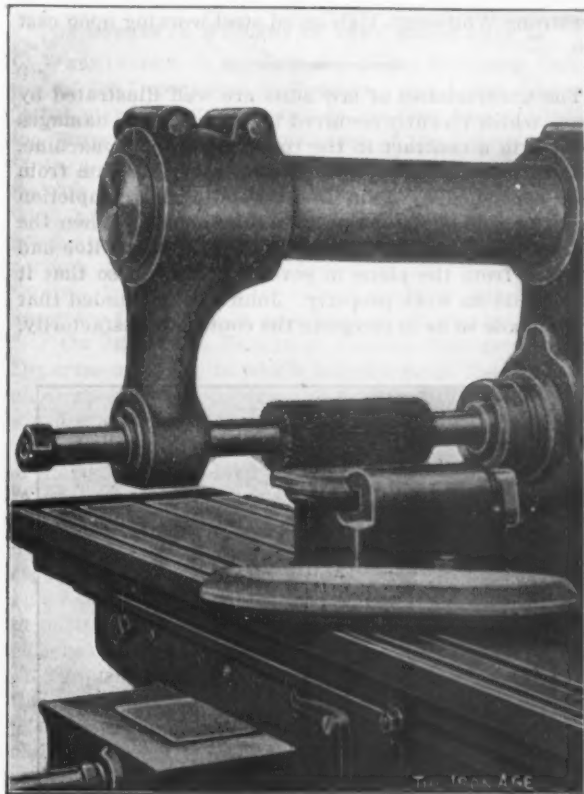


Fig. 4.—Cutting Slits in Gas Burners.

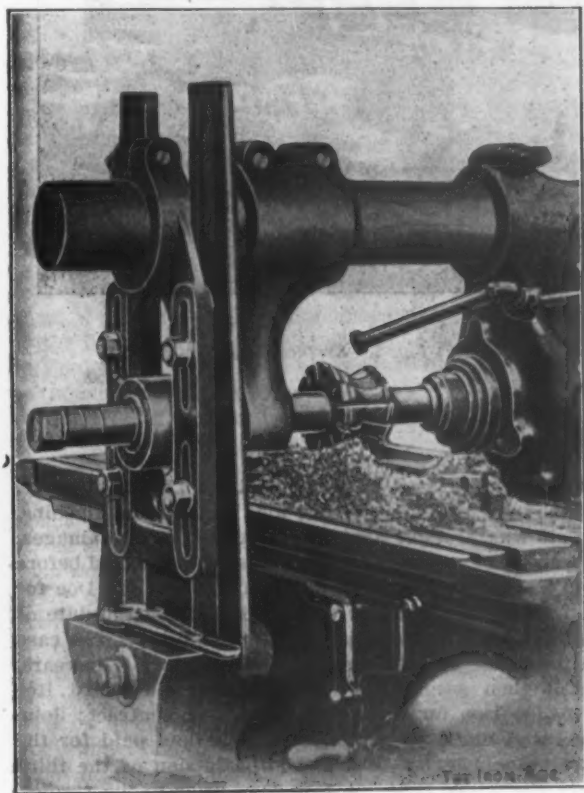


Fig. 5.—Milling Triggers

holes. The shape of the jaws is made so as to support the links against the pressure of the cut. The following are the leading particulars of the job: The diameter of central portion of cutters 4 inches. [Note: This is the part which is doing the heavy work.] Total width of cut, 9 $\frac{5}{8}$  inches; number of teeth of form cutters, 14; speed of cutter, 48 turns, equal to 50 feet per minute; feed,  $\frac{1}{2}$  inch per minute; feed per tooth, 0.0007 inch; material milled, mild steel; cutters made from ordinary tool steel.

Fig. 4. Machine arranged for cutting slits in burners for gas fires. The saws are mounted in a gang, and all the slits are milled at once. In the example on the machine 105 slits were milled. The maximum number of slits on this job was 120. The saws were 120 in number, 3 inches in diameter, 1-32 inch wide, giving a total width of cutting edge of 3 $\frac{3}{4}$  inches. Number of teeth in each saw, 30. Speed, 51 turns, equal to 40 feet per minute. Feed, 2 inches per minute. Feed per tooth, 0.0013 inch. The saws were made from ordinary tool steel, cutting cast iron. [Note the special fixture for quickly setting the work.]

Fig. 5. This is an example of a method which Herbert & Co. use for producing flat triggers of curved outline. Instead of making these from pieces of flat steel, they are milled up to the outline in long bars, which are then cut off into a large number of short lengths. This method saves a great deal of time in chucking, as the long bar is very easily held and is better for the cutter, as the cut is continuous. The bar in question is held in a special fixture, which is not very easily seen in the engraving, as it is covered with chips. The cutter was 5 inches diameter by 3 $\frac{3}{4}$  inches wide, with 12 teeth. The maximum depth of cut is 1 inch. Speed, 32 turns, equal to 42 feet per minute. Feed,  $\frac{1}{2}$  inch per minute. Feed per tooth, 0.0013 inch. The cutter was made of ordinary steel, and the material milled mild steel.

Fig. 6 shows the machine arranged for cutting off blanks for screwing dies, three saws and an ending cutter

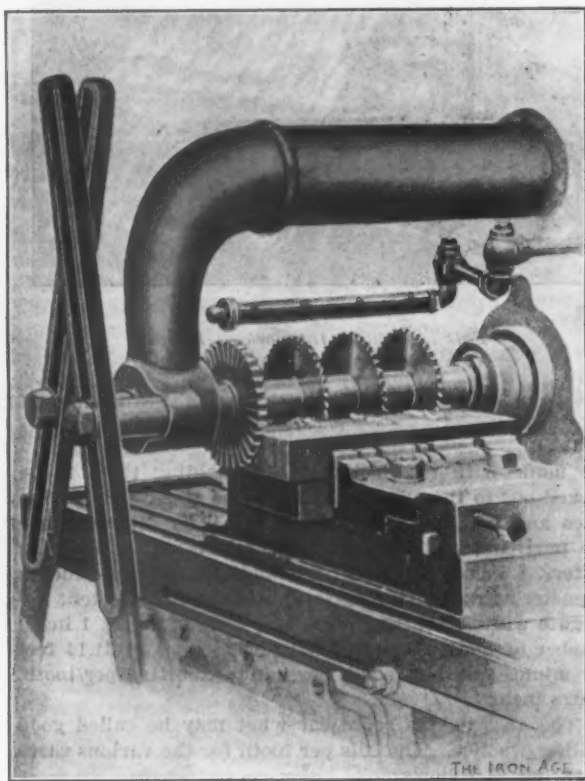


Fig. 6.—Cutting Off Blanks.

#### SOME ENGLISH MILLING MACHINE METHODS.

milling the sides of links for chain conveyors. The links are made from flat bars, and first drilled at each end in a jig, as shown by the two links lying loose upon the table. They are then mounted in a special vise, the jaws of which carry long pins for locating the links by their

being used. It is to be noticed that the vise is arranged so as to support the bars efficiently, and is provided with slits for the cutters to pass through. The following are particulars of the job: Number of cutters, 4; diameter, 4 inch; number of teeth, 36; total width of cut,  $\frac{1}{2}$  inch;

depth of cut, 1 inch; speed, 32 turns, equal to 33.5 feet per minute; feed,  $\frac{1}{2}$  inch per minute; feed per tooth, 0.00043 inch. The average output from this machine was 150 pieces per hour. The cutters were made from ordinary tool steel, and the material to be cut was also tool steel.

Fig. 7 shows a machine arranged with a special fixture and a gang of cutters for milling interlocking plates for railway signaling apparatus. The plate to be milled was somewhat thin and required very efficient support. This was obtained by means of spring plungers, which bore against the underside of the plate and were then clamped by screws on the front of the fixture. The plate was clamped down by means of sharp edged plates bearing against it at each end. Two of these plates are clearly seen in the engraving. The cross slots, which are shown in the rough, were afterward milled in another fixture by a similar method. The cutters for milling out the slots

the spindle, being screwed direct upon it. The following are particulars of the job: Cutter, 12 inches diameter, 16 teeth; width of cut,  $11\frac{1}{2}$  inches; depth, 5-32 inch; speed, 24 turns, equal to 75 feet per minute; feed,  $7\frac{1}{2}$  inches per minute; feed per tooth, 0.015 inch; cutters made of Armstrong-Whitworth high speed steel working upon cast iron.

The uncertainties of law suits are well illustrated by a case which recently occurred in an action for damages to perform a contract in the construction of a machine. Richard Roe agreed to build one for a certain sum from plans furnished by John Doe. Pending its completion the latter sold the machine to a third party. When the machine was finished it was found that Richard Roe had departed from the plans in several instances, so that it failed to do its work properly. John Doe demanded that it be remade so as to complete the contract satisfactorily,

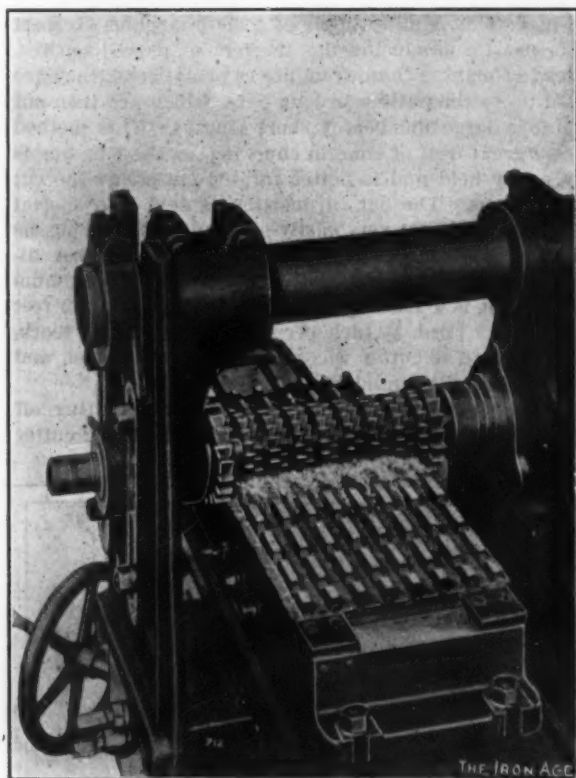


Fig. 7.—Milling Interlocking Plates.

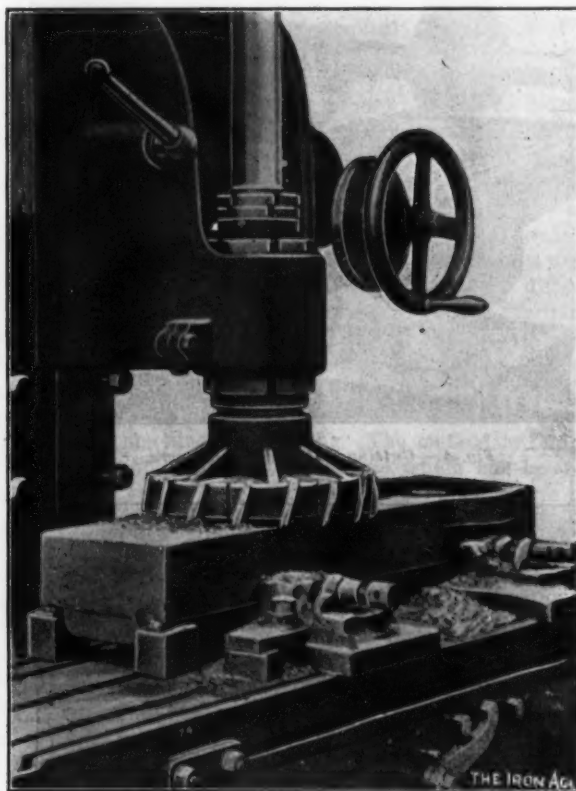


Fig. 8.—Surface Milling.

#### SOME ENGLISH MILLING MACHINE METHODS.

are made with interlocked teeth, enabling them to be packed out to the proper width, as the teeth wear on the sides and require to be ground up. The following are the particulars of this job: Seven sets of interlocking cutters, 4 inches diameter; two slotting cutters, 4 inches diameter; two slotting cutters,  $5\frac{1}{2}$  inches diameter; aggregate width of cutting edge,  $12\frac{1}{4}$  inches; depth, 1 inch; number of teeth, 24; speed, 30 turns, equal to 31.14 feet per minute; feed, 2 inches per minute; cutting per tooth, 0.0028 inch.

The above cases represent what may be called good milling practice. The cuts per tooth for the various cases work out as follows:

0.0003 0.0007 0.0013 0.0013 0.00043 0.0028 inch.

It will be seen that the actual dimensions of the chips are not very great. Fig. 8 is an example of a different kind. It shows a larger vertical milling machine surfacing the top of a capstan slide. It will be noticed that the teeth of the milling cutter are provided with rake similar to an ordinary cutting tool. The cut per tooth is very much greater than in the previous examples, and it will generally be found that with face cutters a much higher duty per tooth is possible and usual than in the case of cylindrical cutters. The cutter is strongly attached to

but this was refused by Richard Roe. The third party, in consequence of the defects, also refused the machine, so suit was brought against Richard Roe for damages, amounting to a round sum. The case came to trial before a jury, who awarded a verdict in favor of John Doe for the full amount claimed, with interest from the date of the delivery of the machine to the third party. The case had been dragged through the courts nearly four years, and it then assumed a curious aspect. Richard Roe owed Joe Doe for failure to perform a contract; John Doe owed the third party the sum he had paid for the machine, which had been in the possession of the third party the whole time. A few days prior to the verdict, and while the case was on trial the third party got tired of seeing the machine about, so he sold it to a junk man and put the proceeds in his pocket. By this act he acknowledged and accepted the machine as his property, to do as he pleased with, and thereby cut himself off from recovering anything from John Doe. The lesson conveyed by this case is one of interest to all, for it shows the danger of interference, by persons not interested, with law suits in course of settlement. The third party was not in the case at all, in this instance, his remedy being in a separate suit as against John Doe, but he un-

dertook to settle the case himself, with the result noted. Property in litigation must be let alone until the title is conclusively settled.

### Department of Commerce and Labor.

#### Changes in Bureaus to Take Effect July 1.

WASHINGTON, D. C., June 16, 1903.—Secretary Cortelyou of the Department of Commerce and Labor has perfected plans for the transfer to the new Department of the Bureau of Foreign Commerce of the Department of State, as recently foreshadowed in these dispatches. In making this transfer steps have been taken to put the work of the bureau on such a basis that it will be of much greater value to American manufacturers and exporters, as well as to the importing interest, than ever before. In describing the efforts made in this direction Secretary Cortelyou, in an official announcement, says:

"On July 1 the Bureau of Foreign Commerce of the Department of State, which has charge of the collection, publication and distribution of the commercial reports of consular officers, will be transferred to the Department of Commerce and Labor, and consolidated with the Bureau of Statistics, which is to be transferred from the Treasury to the new Department. The collection of the reports will be made through the consular officers, under the direction of the Secretary of State, through whom the reports will be transmitted to the Secretary of Commerce and Labor. The two departments are expected to work in harmonious co-operation, as the functions of each are clearly defined and there is full agreement between them.

"James C. Monaghan, who has been chosen to edit the reports, under the supervision of Mr. Austin, Chief of the Bureau of Statistics, is a professor in the commercial department of the University of Wisconsin, and was consul at Mannheim, Germany, from June 17, 1885, to March 24, 1890, and at the important industrial center of Saxony—Chemnitz—from May 5, 1893, to March 31, 1900, so that he has had exceptional experience in consular work. While consul at Chemnitz he was a frequent contributor to consular reports on a great variety of subjects and wrote a valuable series of articles on the technical and trade schools of Germany. It is assumed, therefore, that the efficiency and celerity attained by the State Department in the publication of commercial information from abroad will not only be fully maintained by him, but the value of the publication will be enhanced because of the greater variety of information obtained by the consolidated bureau."

The detaching of the Bureau of Foreign Commerce from the Department of State will result in the establishment of a new bureau in that Department, to be known as the Bureau of Trade Relations, the head of which will be Frederic Emory, who since April, 1894, has had charge of the work of editing consular reports. The new bureau will be created on July 1, under section 11 of the Department of Commerce act, which provides that a person with the rank of Chief of Bureau shall be designated by the Secretary of State, "To formulate under his direction, for the instruction of consular officers, the requests of the Secretary of Commerce and Labor, and to prepare from the dispatches of consular officers, for transmission to the Secretary of Commerce and Labor, such information as pertains to the work of the Department of Commerce and Labor." Besides these functions the new bureau of the State Department will have other duties, such as the collection and transmission of consular reports on special subjects, other than commercial, for various branches of the Government service, and the compiling of information for the use of the Department of State in the consideration of questions arising in our foreign intercourse.

It is anticipated that there will be some interesting developments in the work of the Bureau of Corporations of the Department of Commerce soon after the beginning of the new fiscal year. An additional appropriation will then be available, and it is understood that a considerable number of appointments to the staff of special examiners will be made with a view to equipping the bureau for the work of investigating corporations. At the outset this work will be confined to the collection of statistical and

other information desired by the bureau in connection with an elaborate tabulation of data now being made for future reference. The published information with regard to the leading industrial corporations of the country has been carefully gathered, but will require to be supplemented by special statistics. There has been some discussion of the advisability of calling upon the large corporations doing an interstate business to make a special return soon after the beginning of the new fiscal year upon a schedule to be prepared by the bureau, but no decision has yet been reached on this point.

Section 1 of the Act approved February 14, 1903, establishing the Department of Commerce and Labor, provides that the Secretary of Commerce and Labor "shall cause a seal of office to be made for the said Department, of such device as the President shall approve." After careful consideration of many designs the following has been recommended by Secretary Cortelyou and approved by the President:



The ship is a symbol of commerce, and the anvil and hammer are symbols of industry and labor. The crest is the eagle of the American arms, and denotes the national scope of the Department.

W. L. C.

#### A Semet-Solvay Coke Plant at South Chicago.

The acquirement of 193 acres of land at South Chicago in the Calumet district, upon which, it is reported, will be constructed 120 retort coke ovens, has created considerable interest in industrial circles within the past few days. F. R. Hazard of Syracuse, N. Y., who is said to represent a number of Eastern capitalists, has purchased the ground referred to. The land has been secured in three tracts. The first two tracts embrace 33 acres in the vicinity of 111th and 112th streets, on the Calumet River, the river forming the eastern boundary and Torrence avenue the western boundary; \$217,250 was paid for this property. The principal tract, however, embraces the southeast quarter of section 13, extending from 110th street on the north to 114th street on the south, and from Torrence avenue on the west to Paxton avenue on the east, containing 161 acres, for which \$220,000 was paid, making a total expenditure of \$437,250 for the entire property. The land is admirably situated for shipment, either by rail or water. The Calumet Western, Chicago & Western, Indiana and the Chicago Junction railroads are adjacent to the property, and the Nickel Plate Road bisects the principal tract from north to south.

It is understood that the Semet-Solvay Company will prepare the plans and supervise the construction of the coke ovens, and also will probably lease and operate the plant when completed. The estimated cost of the buildings, ovens, coal handling machinery and other equipment will be \$1,500,000, making a total investment of \$2,000,000.

The intention, it is claimed, is to dispose of fuel gas to the industries in the vicinity. The other by-products, tar and ammonia, will doubtless find a ready market. The plant is expected to be in operation in about a year from date. It is contemplated to construct additional ovens ultimately. The property secured by the coke interests is in the vicinity of the steel plant being erected by the International Harvester Company and the blast furnaces of the South Chicago Furnace Company.

## The New 13,000-ton Battle Ships.

### Naval Board on Construction Designs a Novel Type.

WASHINGTON, D. C., June 16, 1903.—The Board on Construction of the Navy Department has made a report, which has been approved by Secretary Moody, describing the general characteristics of the two 13,000-ton vessels authorized by the last naval appropriation act. The vessels as designed will represent a compromise between the 16,000-ton cruisers of the "Minnesota" and class, bids for which were opened last week, and the armored cruisers of the "Pennsylvania" and class, except that the speed of the new ships will be several knots less than that of either type mentioned.

The decision of the board is generally recognized in naval circles as the beginning of another protracted controversy among naval experts concerning the weight that should properly be given to the various factors which go to make up the general efficiency of a war vessel. The Navy Department in recent years has opposed the idea of building battle ships of less than 16,000 tons, and were it not for the legislative requirement coupled with the appropriation in this instance the two vessels under construction would have been planned as armored cruisers. As the law provides specifically for battle ships, however, the Department has felt constrained to design as effective a vessel as possible on battle ship lines, though realizing that the undertaking is more or less experimental. The report of the Board on Construction, which is addressed to the Secretary of the Navy, is as follows:

"Sir: In compliance with the Department's order of March 6, 1903, the board has given careful consideration to the question of the designs of the two battle ships of 13,000 tons displacement authorized by the act of March 3, 1903. The board has had under consideration a number of sketch plans of types of vessels of 13,000 tons displacement, and has concluded that the intent of the act would be best complied with, and the interests of the navy furthered under this act, by retaining for the vessels in question as nearly as possible the offensive and defensive features of the first-class battle ships, and reducing the speed and power and the coal to be carried on trial to the amount necessary in order that the trial displacement of 13,000 tons may not be exceeded. The board has agreed upon sketch plans with the following characteristics: Length, 375 feet; breadth, 77 feet; mean draft, 24 feet 6 inches; trial displacement, 13,000 tons; horsepower, 10,000; trial speed, 16½ to 17 knots; battery: 4 12-inch breech loading rifles, 8 8-inch breech loading rifles, 10 7-inch breech loading rapid firing, 12 3-inch breech loading rapid firing, 6 3-pounders, 4 1-pounders, 2 3-inch field, 2 machine, 6 automatic.

"Armor protection: Water line belt, 9 inches, tapered to 7 inches at bottom in way of machinery space, reduced at ends to 7, 5 and 4 inches; casemate and athwartship, 7 inches; main turrets, 12 and 8 inches; main barbettes, 10, 7½ and 6 inches; lesser turrets, 6½ and 6 inches; lesser barbettes, 6 and 4 inches; sub-barbettes, 3¾ inches; ammunition tubes, 3 inches; conning tower, 9 inches; conning tower tube, 6 inches; full coal capacity, 1750 tons.

"It is seen that the vessel which the board has agreed upon, as compared with the 'Connecticut,' will have, as regards armament, the same main battery, excepting only a reduction of the number of 7-inch guns from 12 to 10. Owing to the reduction in length from 450 to 375 feet, the secondary battery is somewhat less than the 'Connecticut's,' the principal differences being in the reduction from 20 to 12 3-inch and 12 to 6 3-pounder guns. Part of the reduction in secondary battery is due to the fact that in order to secure the heavy main battery and corresponding protection of a first-class battle ship it is necessary to omit the after military mast and to reduce the freeboard aft, as on the 'Maine' class. It is accordingly not intended to fit these vessels as flagships. The weight given to armor protection will be 3377 tons, or 25.9 per cent. of the trial displacement, as against 3992 tons and 24.9 per cent. for the 'Connecticut.' The horse-power of the main engines will be 10,000,

against 16,500. The board is of the opinion that in working out that the final designs this power will provide a maximum trial speed of 17 knots.

"Although the full coal capacity will be about 1750 tons, as against 2200 in the case of the 'Connecticut,' its endurance at 10 knots is estimated at about 5750 knots, as against about 5300 for the 'Connecticut' at 10 knots under ordinary conditions.

"The board recommends that the bureaus be directed to proceed with the detail plans of the vessels outlined above, to be used by the board in preparing the circular defining their chief characteristics."

#### The Board Not a Unit.

The report is signed by Admirals O'Neil, Chief of the Bureau of Ordnance; Bowles, Chief Constructor, and Melville, Engineer-in-Chief, Admiral Bradford, Chief of the Bureau of Equipment, being absent. Admiral Melville, however, qualifies his acquiescence in the report of the board by a memorandum submitted in connection with his signature, as follows:

"While these vessels will undoubtedly be quite efficient, they would, in my opinion, be very much more so if given more speed, since I do not consider that a very heavy battery, comparatively low speed and small coal capacity, with only 9 inches of side armor, make the best possible combination. The displacement being limited to 13,000 tons makes it difficult, if not impossible, to produce a thoroughly satisfactory and up to date battle ship."

Admiral Melville's criticism of the new plans is quite generally echoed by those officers of the navy who have seen the largest amount of service, by whom the defects in the proposed type are described in the terse statement that the new vessels will be "too small to stay and fight a first-class battle ship and not fast enough to run away from her." It will be noted that while the new vessels are to be of 3000 tons less displacement than the "Connecticut" and 75 feet less in length over all, the battery is almost as heavy as that of the larger ship. The horsepower will be 10,000, against 16,500, and the maximum service speed will probably not exceed 16 knots, as against 18 knots. Experts who favor the proposed type do not contend that these vessels will be available for such service as would be expected of first-class battle ships, but rather that they possess certain qualifications for seacoast and harbor defense and for operations on foreign stations where it may be desired to employ a vessel of comparatively light draft but with a heavy battery. The less seaworthy monitor is now about the only vessel available for such special service.

The severest critics of the new plans, however, are those officers who have paid the closest attention to the mishaps recently suffered by the "Maine," which has only been in commission a few months. These officers point to the fact that the board has designed a 13,000-ton vessel with nearly a 16,000-ton armament, but has made no suggestions as to how the smaller ship is to be sufficiently strengthened to stand the stress of the simultaneous discharge of her primary and secondary batteries. The necessary stiffening of decks and the introduction of a variety of supports for turrets and gun mounts will, it is feared, not only materially reduce the space within the ship, but also the weights available for engines, boilers and auxiliary machinery. Doubt is also expressed as to whether the coal capacity figured by the board and the ammunition for the heavy armament can be provided for without exceeding the limit of displacement.

Owing to the limit that must necessarily be placed upon the space to be occupied by boilers and their aggregate weight, it is accepted as a foregone conclusion that water tube boilers will be specified for the new vessels. As to the arrangement of these details Secretary Moody has issued the following order:

"The Department approves the general sketch plans agreed upon by the board, with the characteristics thereof, for the 13,000-ton battle ships authorized by the act of March 3, 1903, as set forth in the board's letter of the 10th inst. The bureaus are directed, and will be so informed by the president of the board, to proceed with the detailed plans of said vessels outlined above, to be used by the board in preparing the circular defining their

chief characteristics, which circular will be submitted to the Department for its approval."

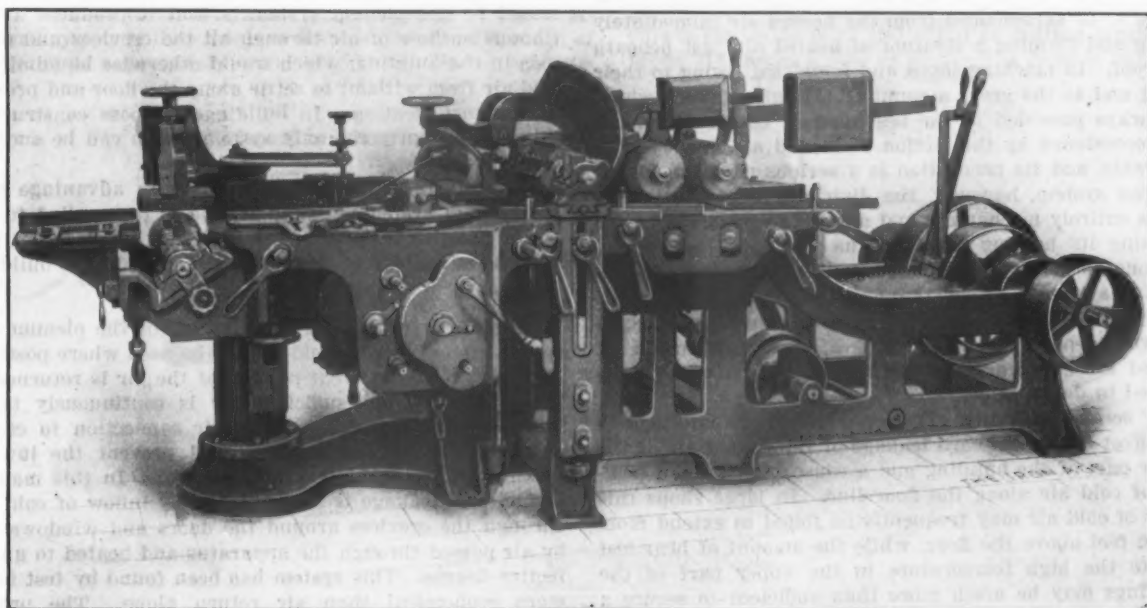
The specifications for the engines and boilers of the new vessels will probably be drafted by Admiral Melville should he remain at the head of the Bureau of Steam Engineering. As has heretofore been announced, further active service on his part is optional with him and he may decide not to continue in his present position after the end of the current fiscal year.

W. L. C.

### The Hermance Four-Side Molder.

A new heavy outside molding machine, adapted to every grade of work, from flooring, ceiling and novelty siding to the heaviest or lightest, has been brought out by the Hermance Machine Company of Williamsport, Pa. The frame, being cast in one piece, provides a solid foundation for all bearings. A heavy octagonal column supports the table and under head. The outside bearing for the top head is made in two pieces. The lower part is a bracket bolted to the frame and resting on the floor, while the upright is accurately fitted and is adjustable vertically to take up the wear of the end box of the top

creased or decreased according to the depth of cut. This is operated by a crank in the end of the machine. The top chip breaker rests firmly upon the material, a flexible cushion allowing it to ride over rough sawed lumber or projections and preventing it from jumping. The side heads rise and descend with the table. Both the inside and outside head stocks are adjustable horizontally and vertically while the machine is in operation. Either spindle can be set at an angle from the front side of the machine, and after being set can be adjusted in or out for a heavy or light cut without changing the angle. The upright head stocks are mounted on heavy cast bars; the front side of the bar carrying the head stock is planed true and on a V shape. The head stocks that slide on these bars are planed to fit. When the head stocks are set to the proper width a bolt at the back part of the head stock is tightened, thus drawing the head stock up against the V-shaped bars, which makes it as solid as though it was cast to the frame, thus allowing the side heads to do as smooth work as the top head. The top head has a lateral adjustment; the bottom head has a lateral and vertical adjustment and is provided with



THE NEW HERMANCE FOUR-SIDE MOLDER.

head. This is an essential detail. The boxes on the main frame will wear more than the outside bearing, as they take the direct pull of the belt. By loosening the two screws on the outside bearing near the bottom it will adjust itself to the proper height, and by tightening up the screws it will always be in line. It is also provided with a bolt that passes through the frame and table and assists in holding the bed firmly in position when set for a certain thickness.

The extra width of face of the gearing adds to the strength of the feed works. There are four feed rolls 6 inches in diameter, all driven by this heavy gearing, which will feed as strongly when the bed is dropped to its full depth as when working on thinner material. The pulleys that drive the feed belts have a wider face, which also adds to the feeding strength. The top feed rolls, which are weighted, rise parallel with the bed and rest their full weight evenly on all parts of the work, insuring a strong, positive feed. They are controlled by a binder lever placed close to the operator, and are held in place by a notched bar. By this means the feed belt can be adjusted tightly for heavy work or more loosely for light work, thus relieving the belt when light work is being done. The upper rolls and chip breaker are raised from the work by means of a lever just back of the rolls, as shown in the cut, to admit of the use of a form for setting up the machine on different styles of work. It has four rates of feed—namely, 18, 30, 38 and 56 feet per minute. There is an adjustable tightener resting on the top of the belt that drives the top head, by which the strain can be in-

chip breakers front and back of the head. The under head has three bearings, or a bearing outside of the driving pulley. The distance between the top and bottom heads is less than in the old style machines. Sectional pressure bars are provided over the under head and in rear of the top head. The rear table beyond the under head swings clear to allow convenient access to the knives. The chip breaker for the outside head is attached to the guide and is self adjusting. There are adjustable chip breakers on both sides of the bottom head and for the inside head.

This machine is built in sizes 9, 10, 12 and 14 inches wide.

The tunnel under the Simplon Pass of the Alps is about three-quarters completed, and will be the longest in the world when finished—to wit: 14 miles, or twice as long as the Mont Cenis Tunnel. Ten thousand men are employed upon it, and it is hoped that the tunnel will be ready for use in two years more. A very great obstacle to the prosecution of the work has been the high temperature in the center of the bore, the men being compelled to work on short shifts, which necessitated the employment of double gangs. The amount of water flowing out of the south end of the tunnel is 15,000 gallons per minute, furnishing ample power for compressing air for the drills and refrigerating the tunnel itself to some extent. The cost of the tunnel alone will be about \$1,000,000 per mile, or nearly the same as the contract for the subway under this city.

## Heating and Ventilating of Foundries and Machine Shops.\*

BY W. H. CARRIER, BUFFALO.

The paper sets forth the nature of the difficulties to be overcome in the satisfactory heating of shop buildings and shows the adaptation of the fan system to the solution of these difficulties.

Heat losses occur in the building from two causes: First, by the direct transmission of heat by radiation, through the walls and exterior surfaces of the building, and, second, by the infiltration of cold air from without. In designing a heating plant the first of these losses may be very accurately determined by referring to tables which have been prepared showing the amount of heat radiated under different conditions through various thicknesses of walls, windows, doors, roof, &c. The heat lost through infiltration varies so greatly in various sizes and constructions of buildings that no definite rule can be given. The allowance to be made for this is necessarily a result of experience and a careful test of previous installations.

In either fan or direct radiation systems difficulty is liable to be experienced from the heated air immediately rising and forming a stratum of heated air just beneath the roof. In machine shops and foundries, owing to their height and to the great amount of skylight surface which is always provided in the best modern construction, the loss occasioned by this action of heated air may be considerable, and its prevention is a serious problem. With the fan system, however, the distribution of the heated air is entirely mechanical and affords an opportunity for utilizing its heating effect to the very best advantage. Various methods of distribution have been devised with the fan system whereby the effect of a rising current of heated air is almost entirely avoided. These systems, in general, depend upon securing a perfect diffusion of heated air along or near the floor line and will be described in detail later.

A second difficulty experienced in high buildings is the effect due to outward leakage of the heated air at the upper part of the building and a consequent inward leakage of cold air along the floor line. In large shops this layer of cold air may frequently be found to extend from 4 to 6 feet above the floor, while the amount of heat lost due to the high temperature in the upper part of the buildings may be much more than sufficient to secure a satisfactory heating effect throughout if properly applied. The most effective remedy for this evil is to maintain a slight pressure within the building by means of a fan, which takes a portion of its air from without.

A third difficulty presenting itself in buildings covering large area and having a large amount of skylight is the cold down draft, which the cooling effect of the skylights has a tendency to produce. In very wide buildings where heat is distributed only along the walls this effect is noticeable, and as it comes directly upon the heads and shoulders of the workmen and is in the part of the building most used, it is very objectionable.

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occasioned by the direct transmission of heat through the walls with this system is very great and may be as high as 25 per cent. or more of the total radiation.

With the fan system the method of supplying and distributing the air in the building is the consideration of chief importance. The usual methods of supplying heated air are, first, where the air is taken entirely from without doors and is forced directly into the building through distributing ducts. This method is generally known as the plenum system, and the pressure produced in the building causes a continuous exit of air from the building, either through the natural openings, as is usually the case in factory and other large buildings, or through special vent openings provided for the purpose, as in public buildings.

A second and more common method for shop buildings where forced ventilation is not a necessity is to draw the supply of air entirely from within the building and again forcing it through the distributing ducts. This causes a continuous circulation of the air within the building, and when properly applied secures excellent results.

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There are several systems of distributing the supply of heated air. A method usual in public and office buildings, and sometimes employed in factory buildings, is the vertical duct system by which the air is admitted through vertical flues or ducts built in the walls at a point about 8 feet above the floor. A method of distribution quite similar to this is one where the air is first blown into brick ducts placed underneath the floor. From these ducts vertical galvanized iron risers are arranged along the walls.

This system is also frequently very successfully employed in foundries. Advantages of this system are, first, that there is no overhead piping in the way of cranes, &c.; second, that the greater portion of the distributing ducts are brick and are not subject to deterioration. The third and principal advantage is that the air can be distributed by this means where most needed. This system is sometimes somewhat modified by placing the outlets close to the floor and blowing downward directly along the floor. This secures a perfect diffusion of the heated air at the floor line and avoids any drafts which would be objectionable.

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one or two large units, seven separate sets of apparatus have been provided, placed in small fan houses built at intervals at either side of the building. The peculiar feature in this and similar installations is that no distributing ducts or piping for the heated air are used; the air being blown directly into the building at about 8 or 10 feet above the floor through an outlet branching in three directions, and through which the air passes at a comparatively high velocity. The distribution is effected entirely by return vent ducts, distributed at frequent intervals along the walls, opening into large return air tunnels, which are provided on either side of the building and serve the additional purpose of affording a convenient place for locating steam and water mains, and also electric light and power mains. Provision is made for taking a portion of the air from without doors to secure a plenum. One great advantage of this system is that it removes all cold air leaking into the building at the floor line, as well as that produced by the cold down draft next to the walls. Further, a perfect distribution is secured in all parts of the building, and the cost of installation is reduced to a minimum.

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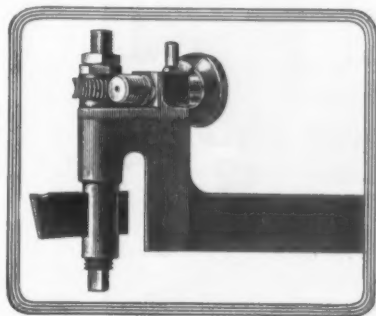


Fig. 1.

the members on "Manufacturing Costs," the address being followed by a general discussion of the subject. An application for membership was received from F. D. Moffat & Co. It was voted that the July and August meetings be held in the way of outings and that all business be deferred until September.

### The Rabiger Fillet Tool.

Every machinist knows the difficulty of turning a fillet in shafting rolls, or other work on the lathe, or of cutting an accurate curve on planer or shaping machine. It is necessary to make a special tool for each radius, ground to fit the desired curve exactly. Then the tool must be fed straight in toward the center of the curve, and it soon begins to cut the metal on all sides. It is then almost impossible to prevent the tool from chattering, especially on a large fillet, no matter how slowly and carefully it is fed. In consequence the work is very slow and difficult, and when finished it is almost always poorly done.

The fillet tool which we illustrate herewith removes all difficulty and makes the turning or shaping of accurate curves as easy and rapid as cutting straight surfaces. It makes a fillet of any radius from  $\frac{1}{8}$  to 6 inches.

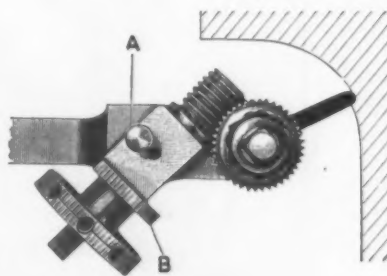


Fig. 2.—Plan View.

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In many instances a system of elaborate distribution is impracticable or undesirable. In such cases a centrally located apparatus or discharge pipe may be used. From this point the air is blown in all directions, and a circulation is produced by an exhaust connection to the fan inlet. In such instances very effective heating has been secured even where it was required to blow the air long distances. Perhaps as good an example of the successful operation of such a system may be found in the Buffalo Forge Company's installation in the foundry buildings of the General Electric Company at Schenectady. This foundry, which is probably one of the largest in the world, is heated in an entirely satisfactory manner with a few large branch outlets. Since the plant was installed a large addition has been built on one end of the building. This addition is satisfactorily heated by a branch inlet situated at over 200 feet from the further end, which shows how thorough a distribution may be secured by a forced circulation.

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The Baldwin Locomotive Works of Philadelphia are one of the largest employers of workmen of all trades in this country, or any other, except Krupp's, possibly. No less than 15,000 men are now under the roofs of the Baldwin Works, and the pay roll amounts to \$190,000 weekly. The capacity of the works is equal to five locomotives daily, but in April last 197 complete engines were turned out, with an average weight of 125 tons, and valued at \$2,750,000.

## Heating and Ventilating of Foundries and Machine Shops.\*

BY W. H. CARRIER, BUFFALO.

The paper sets forth the nature of the difficulties to be overcome in the satisfactory heating of shop buildings and shows the adaptation of the fan system to the solution of these difficulties.

Heat losses occur in the building from two causes: First, by the direct transmission of heat by radiation, through the walls and exterior surfaces of the building, and, second, by the infiltration of cold air from without. In designing a heating plant the first of these losses may be very accurately determined by referring to tables which have been prepared showing the amount of heat radiated under different conditions through various thicknesses of walls, windows, doors, roof, &c. The heat lost through infiltration varies so greatly in various sizes and constructions of buildings that no definite rule can be given. The allowance to be made for this is necessarily a result of experience and a careful test of previous installations.

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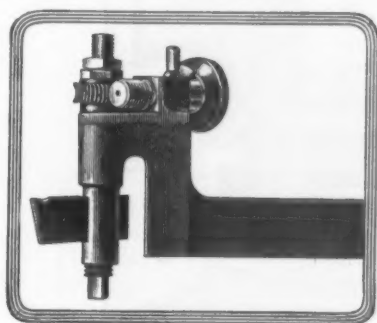


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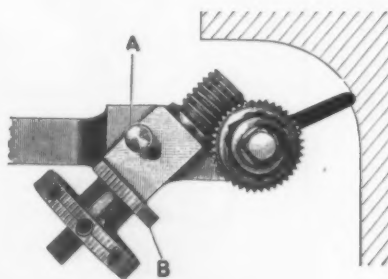


Fig. 2.—Plan View.

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### The Crop Situation.

*Bradstreet's* reviews the crop situation as follows:

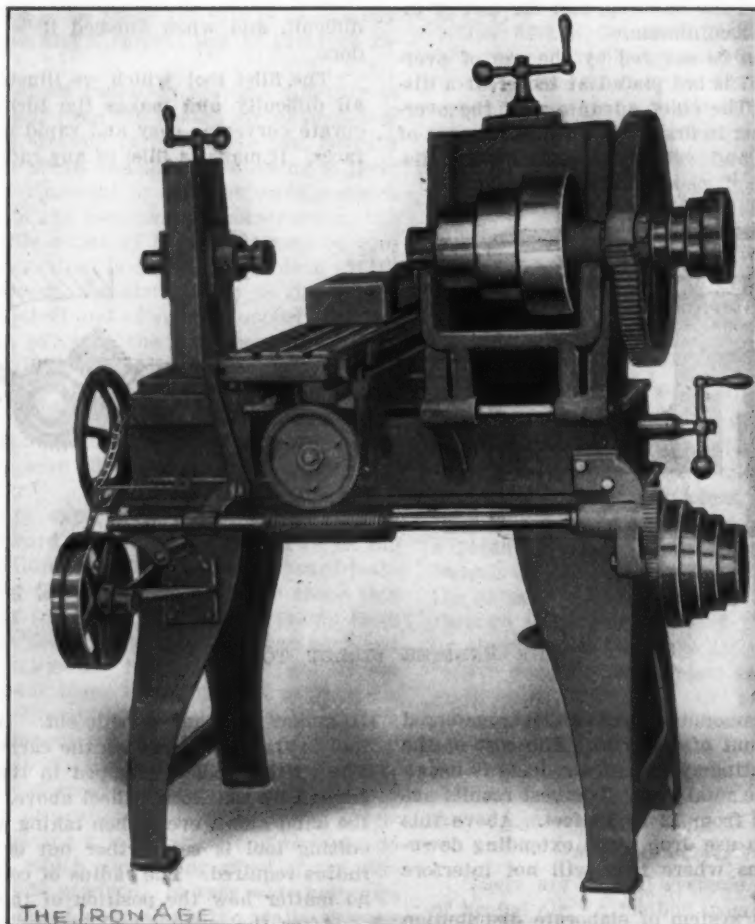
While showing the effect of damage from heavy rains at the West, the June crop report is far from a depressing one, and, as outlined in these columns for some time past, the prospects still are for a record breaking yield of wheat despite all deterioration. There is practical agreement that the winter wheat yield will equal 485,000,000 bushels, and that of spring wheat promises nearly 300,000,000 bushels, or a total promise of 785,000,000 bushels. It may be at once conceded that the spring wheat crop will show some deterioration, but, on the other hand, the winter wheat can gain something from the good weather ruling since this report was made up. In any event, the present prospect is for a total yield of 111,000,000 bushels larger than last year, and 33,000,000 bushels above the best crop previously recorded, that of

date last year, 92 on June 1, 1901, and a ten-year average of 92.9.

The average condition of winter wheat on June 1 was 82.2, as compared with 92.6 on May 1, 1903, 76.1 on June 1, 1902, 87.8 at the corresponding date in 1901, and a ten-year average of 79.1. The total reported area in oats is about 27,732,000 acres, a reduction of 920,000 acres, or 3.2 per cent., from the area sown last year. The average condition of oats on June 1 was 85.5, against 90.6 on June 1, 1902, 85.3 at the corresponding date in 1901, and a ten-year average of 90.2.

### The Carter & Hakes Quick Return Milling Machine Platen.

The Carter & Hakes Machine Company of Winsted, Conn., are manufacturing a new automatic quick return for the table or platen of a milling machine, for which



THE CARTER & HAKES QUICK RETURN MILLING MACHINE PLATEN.

1901. The oats crop prospect is for 862,465,000 bushels, a decrease of 125,000,000 bushels from last year's yield, but still over 100,000,000 bushels better than the average of recent years. The rye crop will be smaller, and that of barley slightly larger than last year. Nothing is said about corn, but the prospect is that that crop will be smaller than last year's record total, though there is abundant chance of an average yield being made. As to the other crops, those of apples and peaches do not promise as well as the average. The area and yield of rice will be smaller than last year.

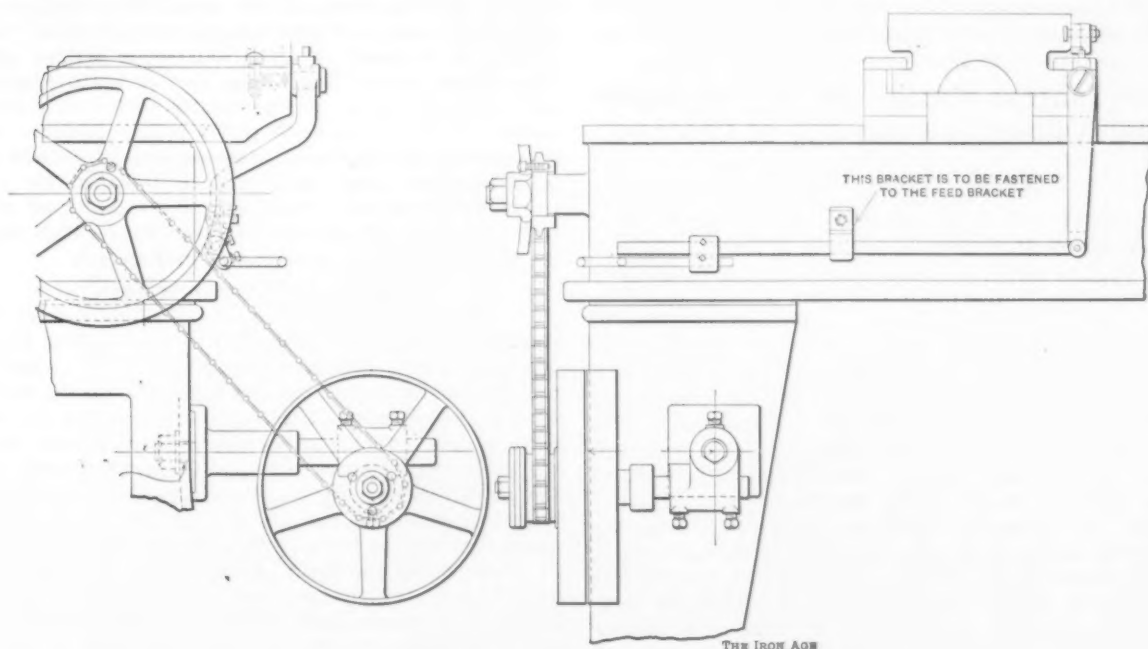
Preliminary returns to the statistician of the Department of Agriculture on the acreage of spring wheat sown indicate an area of about 17,257,000 acres, a decrease of 364,000 acres, or 2.1 per cent., from the revised estimate of the acreage sown last year. An increase of 10 per cent. in North Dakota is accompanied by a decrease in Minnesota and South Dakota, conservatively estimated at 6 per cent. in the former State and 5 per cent. in the latter. The average condition of spring wheat on June 1 was 95.9, as compared with 95.4 at the corresponding

date last year. While the quick return is designed especially for the improved Lincoln manufactured by this company, it may be applied to this type of machine of other makes. The purpose of the quick return is to save time and labor by automatically and quickly returning the table immediately after it stops feeding, and automatically stopping the table at any desired location. It can be regulated for any desired length of table feed. However, it does not in any way interfere with the ordinary old fashioned way of returning the table by hand. It also has the advantage of retaining the same rate of return table speed regardless of the speed of the cutting feed, as the pulleys on the quick return are belted direct from the countershaft.

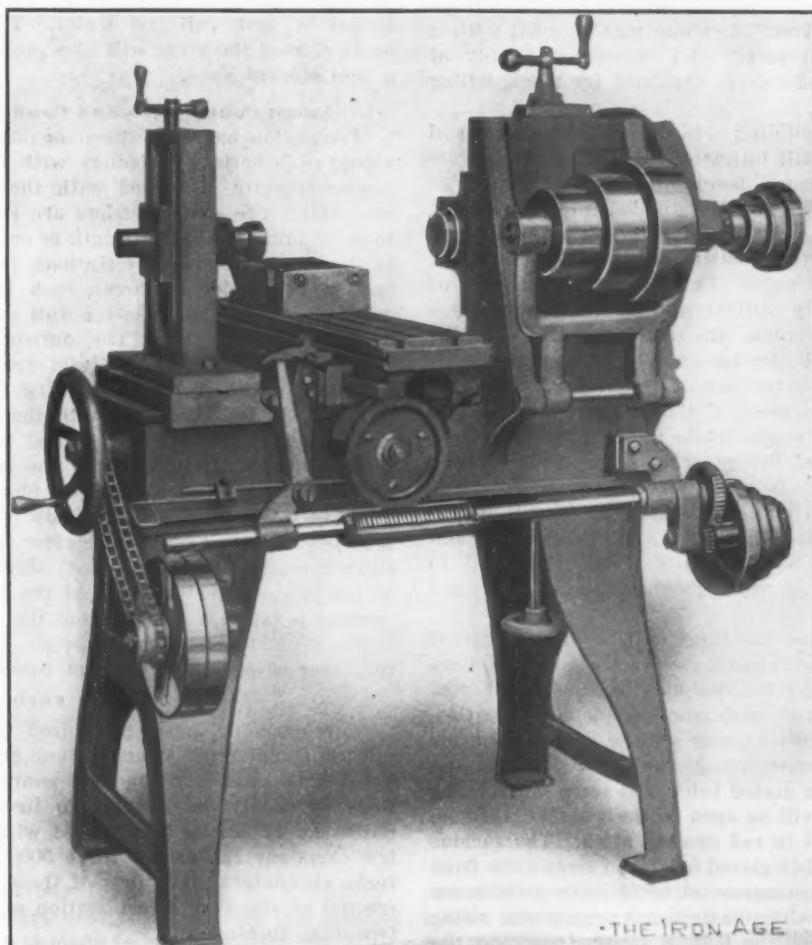
The essential parts of the quick return are the lever attached to the end of the carriage and tripped by the lever shifting dogs in the T-slot on the back side of the table, as shown in the accompanying illustration. A belt shifting rod extends from this lever to the loose pulleys, these pulleys being driven by a pulley from the countershaft and running on a stud or shaft extending from the

bracket. A sprocket and friction driving mechanism is fitted to the hub of the outer pulley. There is also a sprocket attached to the hub of the hand wheel on the table operating shaft, and this shaft is driven by a chain from the sprocket of the outer pulley.

dog has released the lever and let the feed worm drop from the worm gear the belt shifting rod will have shifted the belt to the outer loose pulley. Until the feed worm has ceased to be in contact with the worm gear the friction is slipping, but the instant the regular feed is



*Elevations.*



THE CARTER & HAKES QUICK RETURN MILLING MACHINE PLATEN.

When the belt is not in actual operation returning the table, or when it is not being shifted from one pulley to the other, it is running on the inner loose pulley. In order to put the quick return in operation the inner lever shifting dog in the T-slot at the back of the table should be adjusted so that by the time the regular feed knock off

released the friction ceases to slip and the sprocket and friction on the hub of the outer pulley revolve it, and by means of the chain and sprocket on the hand wheel transmit the power that automatically returns the table to the desired location. This location is determined by properly adjusting the outer shifting dog at the back side of

the table. The dog coming into contact with the lever reverses it, which shifts the belt from the outer to the inner loose pulley, where it remains ready for the next return of the table.

The photographs shown have the old bracket, which has been discarded, but the line cut has the new one, designed especially to simplify work in attaching the bracket to the machine, also in lining the shaft and pulleys.

## New Central Station of the Commonwealth Electric Company of Chicago.

### Curtis Steam Turbine.

Interest in the enterprise of the Commonwealth Electric Company of Chicago in building a new central station at Fisk street was manifested at the recent convention of the National Electric Light Association. The company recently purchased 14 acres of land on the south branch of the Chicago River, near Fisk and Twenty-second streets, upon which they are now building a central generating station which will embody the most modern ideas in central station practice, the construction and operation of which will mark a radical departure from ordinary methods, but the innovation is said to have been sanctioned by the best engineering practice.

The site secured is about  $3\frac{1}{2}$  miles south from the electrical center of the total load of the Chicago Edison and Commonwealth Electric Companies. The central point is, of course, continually shifting, but at present it is near the intersection of Clark and Monroe streets. The property purchased contains 14 acres, 13 of which are on the north bank, between two slips of the river, which at the point of location runs in a westerly direction. The other acre is directly opposite on the south bank of the river. The site was selected with a view to securing an ample and convenient supply of condensing water and special facilities for the handling and storage of coal.

The completed building will be 600 feet long and 230 feet wide, and will ultimately contain 14 turbo-generator units, each rated nominally at 5000 kw. The central station building will be divided into seven bays, each containing two units, but for the present only two bays are under construction, in which will be installed four turbo-generator units. Each of the seven bays of the ultimate building will consist of three sections—namely, the boiler house, the turbine room and the switch house. The boiler house is to be equipped with batteries of boilers extending east and west; the turbine house is to the west of the boiler house section, extending north and south, while the coal receiving portion is on the east of the boiler house, extending north and south, the design being to form a unit of construction, consisting of batteries of boilers, a generating unit and the coal handling machinery, in an easterly and westerly direction. Similar units will be repeated to the north and south as requirements arise for additional capacity.

The exterior of the buildings will be of red pressed brick, with cut stone trimmings. Large openings have been provided for windows designed in ornamental iron, provided with pivoted sash for complete ventilation. The interior of the boiler house will be of pressed brick finished above the wainscoting, the latter being 8 feet high and designed in glazed brick and terra cotta. The coal receiving shed will be open to the weather, through large arches, finished in red pressed brick. The turbine house is to be finished in glazed brick and terra cotta from floor to ceiling, with ornamental terra cotta architraves to all openings, and with pilasters and ornamental string courses. The floor will be laid in vitrified German tile of small pattern, the general effect being that of mosaic. On each side of the turbine house is a narrow gallery extending the full length of the room, constructed of ornamental iron, the floors being laid in tile. The switchboard gallery is two stories high, with ornamental staircases.

### Boiler Equipment.

In installing the boilers a departure has been taken from the usual method of setting lines parallel to the

engines. In this case each boiler house unit is composed of a battery of eight boilers placed at right angles and directly opposite each turbo-generator unit. The boilers are set on a level with the floor of the gallery that passes around the turbine room. The boiler house units at each end of the plant are provided with independent flooring space. In all intermediate units a single flooring space will be common to two sections. Each battery is composed of eight Babcock & Wilcox water tube boilers having 5000 square feet of heating surface and equipped with a superheater and engine driven stoker. Steam is generated to 175 pounds pressure with 150 degrees of superheat. One battery of boilers has been installed. One stack will be provided for each two boiler house units, making seven stacks in all when fully completed. Each stack will be 205 feet high above the boiler room floor and 18 feet in diameter.

### Handling and Storage of Fuel.

Coal is to be brought into the building in cars, discharged through the bottom into hoppers leading to coal crushers, which deliver to main conveyors, which in turn deliver the fuel to bunkers located above the boilers. A separate crusher and conveyor are provided for each battery unit. The ash pits are located directly below the chain grate stokers, arranged to empty directly into the main conveyor, which discharges the ashes into a large ash hopper at the end of each boiler unit directly above the railroad tracks. An auxiliary fine coal hopper is placed under the front of each boiler to receive fine coal siftings, which are thus saved and through the main coal conveyor again dumped into the bunkers. Capacity has been provided for about 1000 tons of coal for each unit of boilers, or about 8 per cent. of the total cubic contents of the building is thus devoted to coal storage. Excellent facilities for receiving coal are afforded by both rail and water. The property on the north side of the river will also probably be utilized for a coal storage yard.

### Steam Connections and Condensing Plant.

Precaution has been taken against accidents by providing each battery of boilers with an individual steam header directly connected with the corresponding turbine unit. The steam headers are located in a separate room running the entire length of each boiler house unit in the basement and directly back of the boilers. Connection is provided between each two adjacent steam headers sufficient to admit a full volume of steam required for each unit. The outlets are controlled by remote operator valves. Steam from each battery of boilers is taken direct to the first stage wheel of the turbines, almost on a line with the individual headers, the vertical turbines being located in the center of the turbine house. Exhaust from the second stage is carried directly to the condensing plant. Water for the plant is taken from the east slip of the river through a large concrete tunnel, and after passing through the surface condenser is discharged through another tunnel in the slip on the west side of the property. Thus advantage is taken of the fact that the current of the river is from east to west, the condenser discharge being into the river several hundred feet below the intake.

### Vertical Steam Turbines.

The company have recognized the immense possibilities of which the steam turbine is capable as an electrical drive and have had the courage of their convictions by boldly determining to install these electrical units, orders having been placed with the General Electric Company calling for three 5000-kw. Curtis vertical turbo-alternators. The first of these units is now being erected at the Fisk street station and is known as the two-stage turbine.

According to W. L. R. Emmet of Schenectady the Curtis turbine retains all the features of its predecessors—the De Laval and Parsons—and introduces some new ideas "which make possible a lower speed, less weight, fewer and simpler parts, higher economy, less cost and some other important advantages.

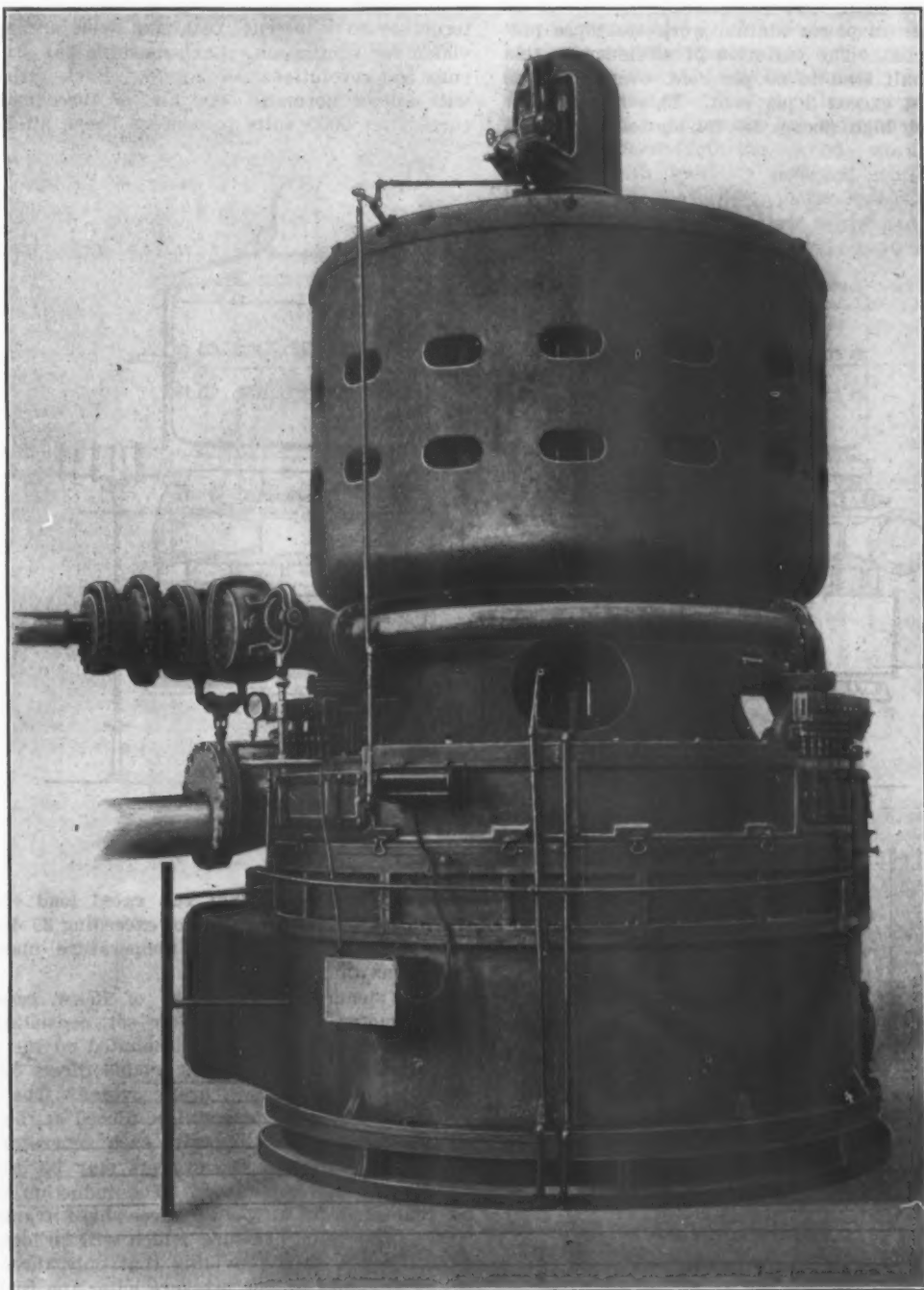
"Velocity is imparted to the steam in an expanding nozzle\* designed to convert efficiently nearly all the

\* The principle of these nozzles will be understood from the article in *The Iron Age* May 21, 1903, on the Curtis turbine.

expansive force, between the pressure limits used, into velocity in the steam itself. After leaving the nozzle the steam passes successively through two or more lines of vanes on the moving element, which are placed alternately with reversed vanes on the stationary element. In passing successively through these moving and stationary elements the velocity acquired in the nozzle is fractionally abstracted, and largely given up to the moving element. Thus the steam is thrown against the first set of vanes of the moving element, and

There may be various numbers of stages and various numbers of lines of moving vanes in each stage. The number of stages and the number of lines in a stage are governed by the degree of expansion, the peripheral velocity which is desirable or practicable, and by various conditions of mechanical expediency."

Generally speaking, lower peripheral speeds entail more stages, more lines of vanes per stage, or both. The general practice is to so divide the steam expansion that all stages handle about equal parts of the total



THE CURTIS STEAM TURBINE.

then rebounds alternately from moving to stationary vanes until it is brought nearly to rest. By this means a high steam velocity is made to impart motion efficiently to a comparatively slowly moving element. The nozzle is generally made up of many sections adjacent to each other, so that the steam passes to the wheels in a broad belt when all nozzle sections are in flow. This process of expansion in nozzle and subsequent abstraction of velocity by successive impacts with wheel vanes is generally repeated two or more times, the devices for each repetition being generally designated as a stage. In the Chicago units there are four sets of buckets on each of the two wheels corresponding to the two stages.

power of the steam. The losses and leakages of the earlier stages take the form of more heat or more steam for the later stages, and are thus in part regained. Much water of expansion, which might occasion loss by re-evaporation is drained out of each stage into that which succeeds it.

The governing is effected by successive closing of nozzles and consequent narrowing of the active steam belt. In the process of governing, the nozzles of the later stages may or may not be opened and closed so as to maintain an adjustment proportional to that of the first stage, which is always the primary source of governing. Some improvement of light load economy may

be effected by maintaining a relative adjustment of all nozzles; but in many cases the practical difference in economy is not great, and automatic adjustment of nozzle opening in later stages is dispensed with in the interest of simplicity. In some machines an approximate adjustment is maintained by valves in later stages, which open additional nozzles in response to increases of pressure behind them. These are used as much for limiting the pressures in stage chambers as for maintaining the light load economy.

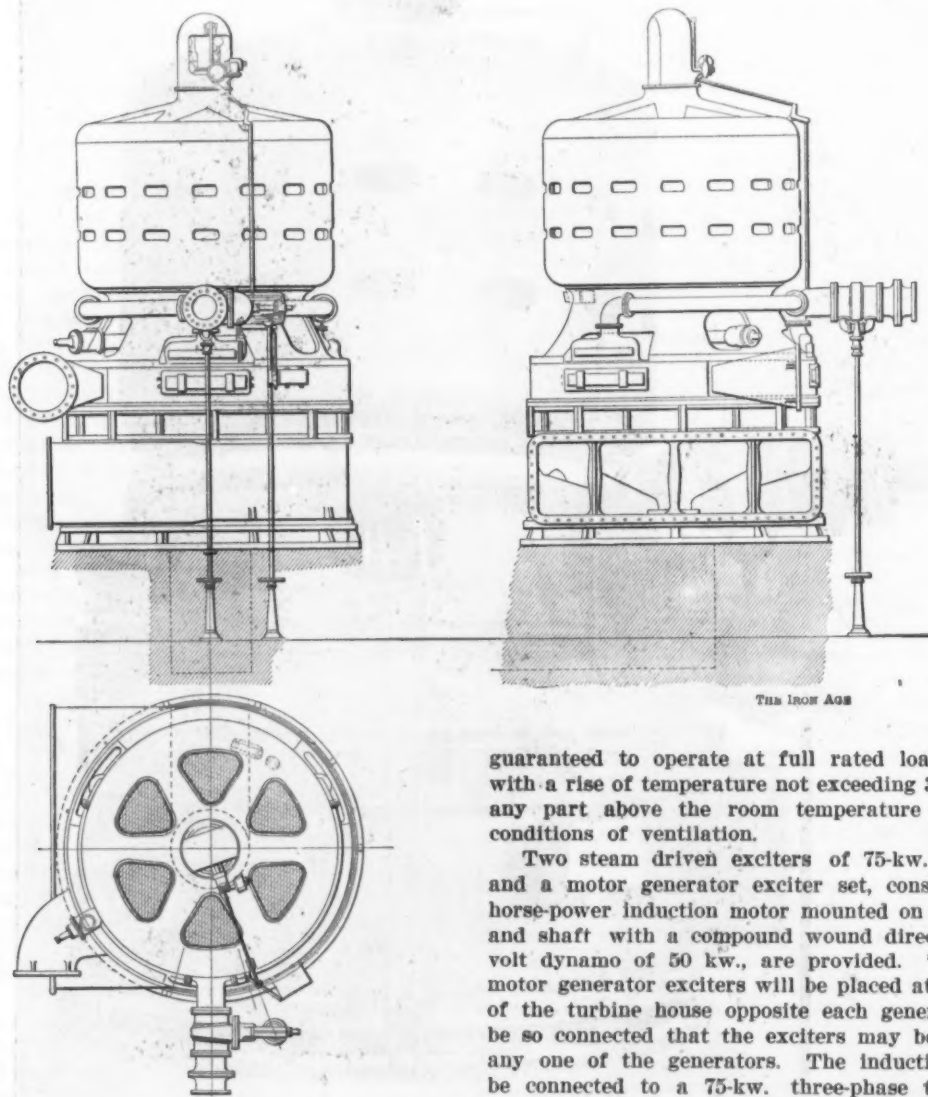
The Chicago turbine is expected to give considerably better steam economies and to be superior particularly in the matter of light load performance—which is of prime importance in power station work—to those previously constructed. The variation of efficiency in this machine from half load to 50 per cent. overload, it is thought, will not exceed 3 per cent. This turbine unit is about 26 feet high above the foundations and 16½

#### The Generator and Exciter System.

In ordinary practice the different generating units will be operated independently and supply three or four feeders, but provision is made to connect the units in multiple so that any unit may replace any other unit in supplying its group of feeders.

The high tension oil switches, current and potential transformers and all connections to feeders are located in a separate building, thus isolating the potential apparatus connections from the turbine house, except the individual generator leads, which take the shortest route under the floor and are carefully insulated and incased.

The electrical generating portions of the turbo-alternators have internal revolving fields and special provision for ventilation. Each machine has six poles and runs 500 revolutions per minute. Each turbo-generator will deliver normally 5000 kw. of three-phase 25-cycle current at 9000 volts pressure. These alternators are



THE CURTIS STEAM TURBINE DRIVING 5000-KW. GENERATOR.

feet in diameter, external measurements. The foundations, however, are about 4 feet above the floor, making a total height above the level of the floor of between 29 and 30 feet. Each machine, with its switching apparatus and connections to outgoing feeders, is complete in itself and separated from adjacent units by fire proof partition walls.

Mr. Emmet has stated that it has been conservatively estimated that engine units like those in the Manhattan Railway Company's power station at New York, can be replaced by turbines like that now being installed at Chicago, and that the cost of such replacement can be paid for by saving in operating expenses in three years.

guaranteed to operate at full rated load continuously with a rise of temperature not exceeding 35 degrees C. in any part above the room temperature under normal conditions of ventilation.

Two steam driven exciters of 75-kw. capacity each and a motor generator exciter set, consisting of a 75 horse-power induction motor mounted on the same base and shaft with a compound wound direct current 125-volt dynamo of 50 kw., are provided. The individual motor generator exciters will be placed at the west wall of the turbine house opposite each generator, but will be so connected that the exciters may be utilized with any one of the generators. The induction motor will be connected to a 75-kw. three-phase transformer of 9000 to 230 volts pressure, which will be located in the switch house, thus providing that only three-conductor No. 0000 cables of low pressure enter the turbine room. These cables will be laid in a vitrified duct. A rotary converter substation of 4000 kw. capacity will also form a connection with the exciter bus bars, thus providing a continuity of current for the exciting of the turbine generator fields. Five hundred thousand circular mil, lead covered, single conductor cables with paper insulation carry the three-phase current from the connection boards on the turbo-generators to the switch house.

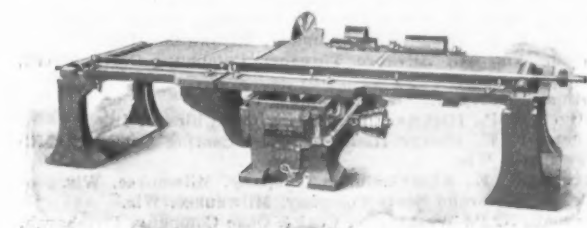
#### Switch House.

The switch house when ultimately completed for the 14 units will be 50 x 460 feet, consisting of a basement and two stories. In the basement will be located the bus bars, all high tension connections and instrument transformers. On the first floor the oil switches, exciter transformers and panels with supplementary in-

dicating and recording instruments will be placed. Upon the second floor will be provided a meeting room, lockers, toilet and bath and other accommodations for the turbine house employees.

#### Operating Gallery.

Two operating galleries will be provided on the west wall, each for seven units, the first gallery being located opposite the fourth unit. These galleries will be made of steel, marble and slate. The lower story,



POWER FEED RAILWAY CUT OFF SAW.

others by vitrified duct, fire proof walls or slate partitions. There is no crossing of wires at any place, so that all cables enter the switch house in the same arrangement as they left the operating gallery.

#### The Woods Motor Driven Wood Cut Off Saw.

The principle of driving individually or in groups wood working machines by electric motors has come to be regarded as a necessary feature of the equipment of every modern wood working establishment, whether in a jobbing shop or elsewhere. The S. A. Woods Machine Company of Boston have realized the importance of electrical transmission and during the last few years have given the subject their special consideration. In designing their machines they have carefully considered the application of motors for individual or group drive and are manufacturing wood working machinery equipped with specially designed motors, the former being built to conform to motor speeds.

The engravings show their heavy power feed railway saw, which will cut off timber 14 x 16 inches or boards

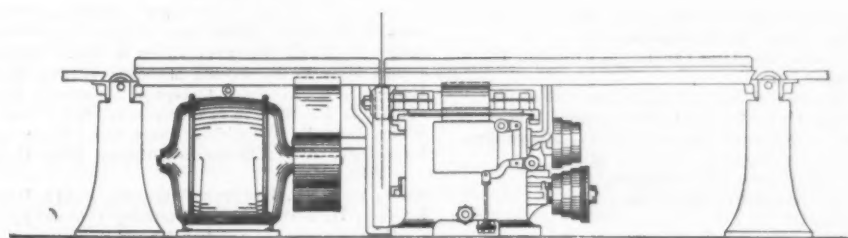


Fig. 2.—End Elevation, Showing Location of Miter.

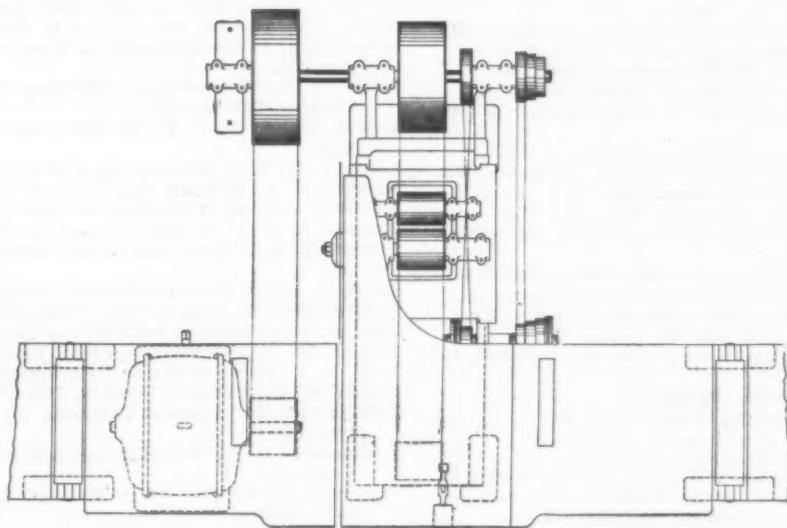


Fig. 3.—Plan.

which will be on the turbine house floor, will contain office space for the chief engineer and his assistant.

On the first floor, which is 14 feet above and on a level with the main gallery, running around the turbine house, there will be provided an office for a load dispatcher, a toilet room and a small portable instrument room.

The second floor, which overlooks the whole turbine house, will be provided with one operating and instrument panel for each turbine generator, carrying instruments, switches and all other necessary apparatus for both the generator and the corresponding feeders or transmission lines.

#### Remote Control and Instrument Wiring.

Provision is made whereby all remote control wires, consisting of multiconductor lead covered cable, are so arranged that those of one unit are separated from all

30 inches wide with a 40-inch saw. The first cut shows the machine power driven, while the two drawings represent the machine equipped with electric motor. These show the motor placed on the floor, out of the way beneath the table, and yet within convenient reach for examination. A motor drive arranged in this way insures decreased cost of maintenance and increased output, and the system possesses great convenience and flexibility.

The first steel tires for locomotives, says *Locomotive Engineering*, of which there is any record, were made from scrap bloomed up in the shops of the Philadelphia & Reading Railroad under the direction of James Mulholland, master mechanic. They were put on a Baldwin six-wheel engine in 1853, and presumably did good service, although our contemporary does not say so.

## American Foundrymen's Association.

(Concluded.)

A partial report was given in last week's issue of the proceedings of the eighth annual convention of the American Foundrymen's Association, held in Milwaukee, Wis., on Tuesday, Wednesday and Thursday of last week. Following is a list of those present:

- Adams, W. J., S. Obermayer Company, Milwaukee, Wis.  
 Augenbraun, P. F., Yale & Towne Mfg. Company, Stamford, Conn.  
 Axner, E. F., Mathew Addy & Co., Chicago, Ill.  
 Bair, A. W., C. M. & St. P. Company, Milwaukee, Wis.  
 Bayley, Harry, Wm. Bayley & Sons Company, Milwaukee, Wis.  
 Best, T. J., Warden, King & Son, Limited, Montreal, Canada.  
 Burroughs, E. R., Abendroth & Root Mfg. Company, Newburgh, N. Y.  
 Bolens, H. W., Gilson Mfg. Company, Port Washington, Wis.  
 Boughton, H. G., Standard Sand & Foundry Sup. Company, Cleveland, Ohio.  
 Barbier, Edw. E., foundry chemist, Milwaukee, Wis.  
 Brown, Willis, Walker Foundry Company, Erie, Pa.  
 Brown, L. S., Springfield Facing Company, Springfield, Mass.  
 Blauvelt, W. S., Solvay Process Company, Detroit, Mich.  
 Bell, Harry L., Dodge Mfg. Company, Mishawaka, Ind.  
 Banholzer, Andrew, Birmingham Machine & Foundry Company, Birmingham, Ala.  
 Barker, R. F., Taylor, Willson & Co., Allegheny, Pa.  
 Burger, J. J., Lane Mfg. Company, Montpelier, Vt.  
 Benjamin, A., Great Western Smelting Company, Chicago, Ill.  
 Beckwith, A. K., Dowagiac, Mich.  
 Brown, James, Mesta Machine Company, Pittsburgh, Pa.  
 Bean, I. M., Northwestern Iron Company, Milwaukee, Wis.  
 Barth, Geo. C., Wisconsin Malleable Iron Company, Milwaukee, Wis.  
 Ball, W. H., Solvay Process Company, Detroit, Mich.  
 Ball, E. H., Chicago Belting Company, Chicago, Ill.  
 Borch, Wm., Brand Stove Company, Milwaukee, Wis.  
 Backman, W. W., Chicago, Ill.  
 Barr, E. K., Herendeen Mfg. Company, Geneva, N. Y.  
 Cadwell, F. S., Michigan Heater Company, Big Rapids, Mich.  
 Charles, A. J., Preble Machine Company, South Chicago, Ill.  
 Cruice, T., Hewett Mfg. Company, Milwaukee, Wis.  
 Cotty, M. J., Ottawa, Ill.  
 Crivel, Geo. F., F. B. Stevens, Detroit, Mich.  
 Cawblar, Colorado Fuel & Iron Company, Pueblo, Col.  
 Comstock, James H., Henry McShane Company, Baltimore, Md.  
 Collrn, Theo. N., Collrn Mfg. Company, Providence, R. I.  
 Chambers, Wm., Garden City Sand Company, Chicago, Ill.  
 Carrier, W. H., Buffalo Forge Company, Buffalo, N. Y.  
 Coleman, John G., Wisconsin Malleable Iron Company, Milwaukee, Wis.  
 Carrolton, R. D., Illinois Steel Company, Milwaukee, Wis.  
 Corbett, Wm., Prescott Steam Pump Company, Milwaukee, Wis.  
 Dickson, E. N., Allis-Chalmers Company, Milwaukee, Wis.  
 Douglass, W. L., Hewett Mfg. Company, Milwaukee, Wis.  
 Dings, M., Dings Electro Magnetic Sifter Company, Milwaukee, Wis.  
 Dickson, Philip S., Allis-Chalmers Company, Milwaukee, Wis.  
 Dopp, J. W., Tabor Mfg. Company, Philadelphia, Pa.  
 Dye, J. Frank, Newport Sand Bank Company, Newport, Ky.  
 Diller, H. E., Western Electric Company, Chicago, Ill.  
 Dowdakin, John E., American Foundry Company, Rockford, Ill.  
 Durkee, H. R., Chicago, Ill.  
 Eagan, D. F., H. E. Pridmore, Chicago, Ill.  
 Etting, Frank M., Edw. J. Etting, Philadelphia, Pa.  
 Evans, David, Field-Evans Iron Company, Chicago, Ill.  
 Evans, James E., S. Obermayer Company, Chicago, Ill.  
 Ericsson, Frank A., McCormack Machine Company, Chicago, Ill.  
 Estep, Ezra, Sandwich Mfg. Company, Sandwich, Ill.  
 Elcock, E. G., Hansel-Elcock Company, Chicago, Ill.  
 Fisher, S. H., Harrisburg Foundry & Machine Company, Harrisburg, Pa.  
 Fitzpatrick, Wm. M., S. Obermayer Company, Pittsburgh, Pa.  
 Fahey, Edw., J. D. Smith Foundry Supply Company, Cleveland, Ohio.  
 Fraser, Donald, Chain Belt Company, Milwaukee, Wis.  
 Field, Hubert E., Farrel Foundry & Machine Company, Ansonia, Conn.  
 Ford, J. C., Spring Lake Iron Company, Fruitport, Mich.  
 Farrell, W. E., Diamond Drill Machine Company, Birdsboro, Pa.  
 Ferguson, W., Wm. Ferguson Foundry Company, Chicago, Ill.  
 Filntermann, R. F., Chicago, Ill.  
 Falk, Otto, Falk Company, Milwaukee, Wis.  
 Falk, Clarence R., Falk Company, Milwaukee, Wis.  
 Forsyth, J. F., Thomas Furnace Company, Milwaukee, Wis.  
 Flagg, Stanley G., Stanley G. Flagg & Co., Philadelphia, Pa.  
 Fair, Samuel S., M. Garlands, Bay City, Mich.  
 Gomersall, Ben., Battle Creek Iron Works, Battle Creek, Mich.  
 Grace, R. W., Bucyrus Company, South Milwaukee, Wis.  
 Cilmour, E. B., Acme Harvester Company, Peoria, Ill.  
 Grunum, W. F., Erie City Iron Works, Erie, Pa.  
 Gow, John, General Electric Company, Schenectady, N. Y.  
 Glasscock, Thos., Pawling & Harnischfeger, Milwaukee, Wis.  
 Golden, J. P., Golden Foundry & Mach. Company, Columbus, Ga.  
 Greenlee, W. B., Greenlee Foundry Company, Chicago, Ill.  
 Gordon, F. E., Ohio Sand Company, Conneaut, Ohio.  
 Garrigan, D., Beloit, Wis.  
 Greenslade, John, Greenslade Foundry Company, Milwaukee, Wis.  
 Gobelie, Jos. Leon, Gobelie Pattern Company, Cleveland, Ohio.  
 Green, M. J., American Foundry Company, Rockford, Ill.  
 Goedke, Chas. F., Wm. R. Perrin Company, Chicago, Ill.  
 Greenslade, O. W., Greenslade Foundry Company, Milwaukee, Wis.  
 Green, J. B., S. G. Green & Son, Des Moines, Ia.  
 Gibby, Y. E., Cardu Iron Foundry Company, Boston, Mass.  
 Garside, Wm., Diamond Clamp & Flask Company, Richmond, Ind.  
 Green, W. M., Hawley Down Draft Furnace Company, Chicago, Ill.  
 Gallery, A. D., Monarch Plow Company, Eaton Rapids, Mich.  
 Hanson, Anton, Phoenix Mfg. Company, Eau Claire, Wis.  
 Hill, John, Hill & Griffith Company, Cincinnati, Ohio.  
 Hankins, Sylv. W., Craig Foundry Company, Toledo, Ohio.  
 Howlett, F. P., Dodge Mfg. Company, Mishawaka, Ind.  
 Hutton, Wm. W., Advance Thrasher Company, Battle Creek, Mich.  
 Hartman, Henry J., Grand Rapids, Mich.  
 Hettiger, E. P., Hickman, Williams & Co., Chicago, Ill.  
 Hinnners, F. E., George H. Smith Steel Casting Company, Milwaukee, Wis.  
 Harrison, A. E., Allis-Chalmers Company, Milwaukee, Wis.  
 Hyde, W. F., Brand Stove Company, Milwaukee, Wis.  
 Hyndman, N. P., Washington Coal & Coke Company, Pittsburgh, Pa.  
 Hamer, V. C., Jenkins & Reynolds Company, Chicago, Ill.  
 Hokanson, G., Sheffield Car Company, Three Rivers, Mich.  
 Hyde, E. A., Pickands, Brown & Co., Chicago, Ill.  
 Hanna, E. E., Chicago, Ill.  
 Johnston, S. T., S. Obermayer Company, Chicago, Ill.  
 Jenkins, W. A., J. Thompson & Sons Mfg. Company, Beloit, Wis.  
 Jones, F. L., J. Howard, Jones & Son, Chicago, Ill.  
 Jones, Miss E. F., Preble Machine Works, South Chicago, Ill.  
 Jones, D. M., Gardner Campbell Company, Milwaukee, Wis.  
 Judge, T. F., Erie Forge Company, Erie, Pa.  
 Jones, John E., Waukesha Sheet Steel Company, Waukesha, Wis.  
 Kalvalage, J. B., Hoffman Billings Mfg. Company, Milwaukee, Wis.  
 Knox, S. L. G., Bucyrus Company, South Milwaukee, Wis.  
 Krisher, H. Jacob, Akron Foundry Company, Akron, Ohio.  
 Krisher, Perry A., Krisher Brass Foundry, Akron, Ohio.  
 Kozmin, Peter A., Professor of Technology, St. Petersburg, Russia.  
 Knowles, W. H., Ottawa, Ill.  
 Knight, S. S., Birmingham Pipe & Casting Company, Birmingham, Ala.  
 Koons, A. F., Webster, Camp & Lane, Akron, Ohio.  
 Kuhn, J. B., Hoffman Mfg. Company, Milwaukee, Wis.  
 Kettenhofen, P. M., Lindemann & Hoverson Company, Milwaukee, Wis.  
 Kane, W. H., International Harvester Company, McCormick Division, Chicago, Ill.  
 Kohler, Walter J., J. W. Kohler Sons Company, Sheboygan, Wis.  
 Kelley, T. P., T. P. Kelley & Co., New York City.  
 Kastner, E., B. Hoffman Mfg. Company, Milwaukee, Wis.  
 Kittilson, John A., Moline Scale Company, Moline, Ill.  
 Kanavel, U. E., E. M. Ayers, Zanesville, Ohio.  
 Lindemann, A. J., Lindemann & Hoverson Company, Milwaukee, Wis.  
 Leuthner, Frank, Lackawanna Steel Company, Buffalo, N. Y.  
 Loudon, Arch. M., J. B. & J. M. Cornell, Cold Spring, N. Y.  
 Lambert, E. J., Syracuse Chilled Plow Company, Syracuse, N. Y.  
 Link, A. W., Erie Foundry Company, Erie, Pa.  
 Lyon, E. J., Brown & Sharpe Mfg. Company, Providence, R. I.  
 Lefebre, W. H., Excelsior Foundry, Bay City, Mich.  
 Lefever, Minard, Advance Thrashing Machine Company, Bay City, Mich.  
 Loudenbeck, H. C., Westinghouse Air Brake Company, Pittsburgh, Pa.  
 Lamoreux, D. P., Beaver Dam Malleable Iron Company, Beaver Dam, Wis.  
 Lane, G. H. T., Lane & Bodley Company, Cincinnati, Ohio.  
 Lemon, E. B., Illinois Steel Company, Milwaukee, Wis.  
 Louis, C. E., A. M. Crane & Co., Chicago, Ill.  
 Latimer, H. D., Pawling & Harnischfeger, Milwaukee, Wis.  
 Lamp, H., Bettendorf Metal Wheel Company, Springfield, Ohio.  
 Moldenke, Dr. Richard, secretary, New York.  
 MacPherran, R. S., Allis-Chalmers Company, Milwaukee, Wis.  
 Mitchell, A. S., foundry chemist, Milwaukee, Wis.  
 Manchester, A. E., C. M. & St. P. Railway Company, Milwaukee, Wis.  
 Mayo, G., Wm. Bayley & Sons Company, Milwaukee, Wis.  
 McPhee, Hugh, Eaton, Cole & Burnham Company, Bridgeport, Conn.  
 Monahan, J. L., Filler & Stowell Company, Milwaukee, Wis.  
 Manning, J. C., Preble Machine Works, South Chicago, Ill.  
 Macduff, Andrew, Stillwell-Belrice & Smith-Vale Company, Dayton, Ohio.  
 Murphy, Jas. A., Ball Engine Company, Erie, Pa.  
 McLain, David, National Electric Company, Milwaukee, Wis.  
 Magee, John, Magee Furnace Company, Boston, Mass.  
 Mills, J. F., Abendroth Bros., New York City.  
 McCormick, J. S., J. S. McCormick Company, Pittsburgh, Pa.  
 Malone, T. E., J. S. McCormick Company, Pittsburgh, Pa.  
 Martin, Richard T., Collins & Burgie Company, Marengo, Ill.  
 MacDougall, D., Pittsburgh Steel Foundry Company, Pittsburgh, Pa.  
 McNeal, Chas., Garden City Sand Company, Chicago, Ill.  
 McArthur, C. E., Western Electric Company, Chicago, Ill.  
 Mesta, F. E., Mesta Machine Company, Pittsburgh, Pa.

McDowell, Irvin, Field-Evans Iron Company, Chicago, Ill.  
 Matthews, J. H., chemist, Milwaukee, Wis.  
 McCarthy, W. H., Chicago Fire Brick Company, Chicago, Ill.  
 McConner, T. T., La Crosse, Wis.  
 Neacy, T. J., Filler & Stowell Company, Milwaukee, Wis.  
 Nortman, V., Nortman & Duffke Company, Layton Park, Wis.  
 Nauert, Herman, Ridgway, Pa.  
 Nieneen, Thos. C., Milwaukee, Wis.  
 Norstrand, H. P. G., Hawley Down Draft Furnace Company, Chicago, Ill.  
 Noldy, J. W. M., Chicago & Alton Foundry, Bloomington, Ill.  
 Osborne, W. H., Milwaukee, Wis.  
 Ormarod, John D., Donaldson Iron Company, Emaus, Pa.  
 Pawling, A., Pawling & Harnischfeger, Milwaukee, Wis.  
 Perry, M. C., Woolley Foundry Company, Anderson, Ind.  
 Payton, Martin, S. Obermayer Company, Madison, Wis.  
 Pridmore, Henry E., Pridmore Molding Machine Company, Chicago, Ill.  
 Patton, W. S., Patton Bros. Company, Marietta, Ohio.  
 Petternick, M., Milwaukee, Wis.  
 Parks, H. S., Coburn Trolley Track Mfg. Company, Holyoke, Mass.  
 Pridmore, E. H., H. E. Pridmore, Chicago, Ill.  
 Petley, Jas. R., National Electric Company, Milwaukee, Wis.  
 Pritham, H. C., Thomas Furnace Company, Milwaukee, Wis.  
 Peebles, John, J. I. Case T. M. Company, Racine, Wis.  
 Prentiss, G. N., Racine Steel & Iron Mfg. Company, Racine, Wis.  
 Quinn, H. T., Crane Company, Chicago, Ill.  
 Reynolds, Irving H., Allis-Chalmers Company, Milwaukee, Wis.  
 Read, Walter, Filler & Stowell Company, Milwaukee, Wis.  
 Rundle, E. K., Rundle Mfg. Company, Milwaukee, Wis.  
 Rowlands, J. T., Rowlands Machine Company, Racine, Wis.  
 Roper, Geo. D., American Foundry Company, Rochester, N. Y.  
 Ricker, A. J., Stowell Mfg. & Foundry Company, South Milwaukee, Wis.  
 Roenins, Otto R., Grand Rapids Foundry Company, Grand Rapids, Mich.  
 Ramp, H. M., General Electric Company, Schenectady, N. Y.  
 Ricker, Adolph J., Stowell Mfg. & Foundry Company, South Milwaukee, Wis.  
 Reardon, John, Filler & Stowell Company, Milwaukee, Wis.  
 Rock, Martin, Geo. H. Smith Steel Casting Company, Milwaukee, Wis.  
 Rider, W. A., Whiting Foundry Equipment Company, Chicago, Ill.  
 Rothe, Joseph F., Green Bay Foundry Company, Green Bay, Wis.  
 Robes, H. J., Bettendorff Metal Wheel Company, Springfield, Ohio.  
 Reddick, H. G., Illinois Steel Company, Milwaukee, Wis.  
 Sheriffs, T. W., Sheriffs Mfg. Company, Milwaukee, Wis.  
 Sercomb, C. A., C. A. Sercomb Mfg. Company, Milwaukee, Wis.  
 Schwab, R. J., Schwab & Sons Company, Milwaukee, Wis.  
 Sivy, Fredk. W., Northwestern Malleable Iron Company, Milwaukee, Wis.  
 Spence, David, Greenlee Foundry Company, Chicago, Ill.  
 Sammond, C. E., Stowell Mfg. Company, South Milwaukee, Wis.  
 Shaw, J. Geo., Geo. H. Smith Steel Casting Company, Milwaukee, Wis.  
 Shaw, Bartlett M., Walker & Pratt Mfg. Company, Boston, Mass.  
 Shepard, C. D., Wm. M. Crane Company, New York City.  
 Sleeth, S. D., Westinghouse Air Brake Company, Pittsburgh, Pa.  
 Scott, Wm., Roe Stevens Mfg. Company, Detroit, Mich.  
 Seaman, J. S., Seaman-Sleeth Company, Pittsburgh, Pa.  
 Stupekoff, J. H., Fullman Company, Pittsburgh, Pa.  
 Seelman, A., B. Hoffman Mfg. Company, Milwaukee, Wis.  
 Smith, P. G., J. D. Smith Foundry Supply Company, Cleveland, Ohio.  
 Schade, G. C., Braddock Machine & Mfg. Company, Pittsburgh, Pa.  
 Sly, W. W., W. W. Sly Mfg. Company, Cleveland, Ohio.  
 Sargent, W. C., Chain Belt Company, Milwaukee, Wis.  
 Smith, Geo. H., Geo. H. Smith Steel Casting Company, Milwaukee, Wis.  
 Stewart, Thelbert Washington, D. C.  
 Schwab, Louis, N. Deutch & Co., Chicago, Ill.  
 Scott, W. G., J. I. Case T. M. Company, Racine, Wis.  
 Sivy, F. L., Northwestern Malleable Iron Company, Milwaukee, Wis.  
 Schlesinger, J. H., Milwaukee Coke & Gas Company, Milwaukee, Wis.  
 Stillson, Howard G., Milwaukee Gas Light Company, Milwaukee, Wis.  
 Sieg, Wilmer, Milwaukee, Wis.  
 Schoff, C. H., Hewitt Mfg. Company, Milwaukee, Wis.  
 Schwab, Philip, Ph. Schwab Machine Company, Milwaukee, Wis.  
 Thomas, Chas. H., Hay Foundry & Iron Works, Newark, N. J.  
 Turner, W. J., Western Malleable Gray Iron Mfg. Company, Milwaukee, Wis.  
 Thielges, Chas., Greenslade Foundry Company, Milwaukee, Wis.  
 Thrope, Fred. D., Holyoke, Mass.  
 Taggart, Frank D., United Engineering & Foundry Company, Youngstown, Ohio.  
 Thomas, J. D., Sterritt-Thomas Foundry Company, Pittsburgh, Pa.  
 Thompson, A. S., J. S. Thompson & Sons Mfg. Company, Beloit, Wis.  
 Trobue, W. D., Phillips & Buttorff Mfg. Company, Nashville, Tenn.  
 Turnbull, R. E., Henry E. Pridmore, Chicago, Ill.

Thomas, John M., Thomas Furnace Company, Milwaukee, Wis.  
 Vilter, Theo., Vilter Mfg. Company, Milwaukee, Wis.  
 Voelkel, Ed. S., Forster, Waterbury & Co., Franklin Park, Ill.  
 Vrooman, H. S., foundry supply, Chicago, Ill.  
 Vance, H. M., E. E. Hanna, Chicago, Ill.  
 Werner, A., Milwaukee, Wis.  
 Walker, Arthur W., Walker & Pratt Mfg. Company, Boston, Mass.  
 Whitaker, Saml. H., Dayton Coal & Iron Company, Cincinnati, Ohio.  
 Woodison, E. J., S. Obermayer Company, Detroit, Mich.  
 Wagner, A. W., Geo. H. Smith Steel Casting Company, Milwaukee, Wis.  
 Winchester, J. W., Magee Foundry Company, Chelsea, Mass.  
 West, Thos. D., Thos. D. West Foundry Company, Sharpsville, Pa.  
 Wilson, Wm. M., S. Obermayer Company, Pittsburgh, Pa.  
 Woodbury, F. E., Milwaukee Coal & Gas Company, Milwaukee, Wis.  
 Walker, H., J. I. Case T. M. Company, Racine, Wis.  
 Williams, W. H., Chicago Malleable Casting Company, West Pullman, Ill.  
 Wright, Harry, Buckeye Malleable Iron & Coupler Company, Columbus, Ohio.  
 Wilson, Joseph J., Chicago, Ill.  
 Williams, G. A., Armstrong Company, Chicago, Ill.  
 Yagle, Wm., Wm. Yagle & Co., Limited, Pittsburgh, Pa.

The report printed last week gave the proceedings up to Wednesday afternoon. The fact should be noted, however, that prior to adjournment on Wednesday morning Prof. Peter A. Kozmin of the Institute of Technology, St. Petersburg, Russia, made a brief address, expressing his pleasure in being able to attend the convention and the interest taken in his country in the researches being made in matters affecting foundry practice under the auspices of the association.

Wednesday evening was devoted to pleasure, entertainment being furnished in the form of a smoker, held in the dining room of the Hotel Pfister. The programme consisted of vocal and instrumental music, stories by a professional entertainer and addresses by foundrymen introduced by W. J. Turner as toastmaster. The entertainment thus provided was of an exceptionally high character and was greatly enjoyed.

#### THURSDAY MORNING SESSION.

The work of the convention was concluded on Thursday morning. The first matter brought up for consideration was a motion by H. E. Field of Ansonia, Conn., which was unanimously adopted, providing for the appointment of a committee to prepare and issue the instruction papers for apprentices and molders recommended by Secretary Moldenke, test the feasibility of the scheme and report at the next convention. Mr. Field was appointed chairman with authority to add others.

The question of the organization of sections for pattern makers and foundry accountants was brought up and the secretary stated that steps would be taken to effect some practical action in this direction.

J. S. Seaman of Pittsburgh, chairman of the Auditing Committee, reported the accounts audited and found correct.

Secretary Moldenke brought up the desirability of increasing the membership of the association, and, alluding to the manner in which several local associations organized for educational purposes are working with the American Foundrymen's Association, suggested the feasibility of bringing into the same relationship the numerous local associations of foundrymen organized to handle the labor question. This brought out interesting statements relative to the management of local associations by J. S. Seaman of Pittsburgh and T. W. Sheriffs of Milwaukee. In the latter city the secretary of the Foundrymen's Association is also secretary of the local Metal Trades Association, and a labor bureau is being developed which will enable employers to secure skilled workmen without interfering with the hands employed by their fellow members.

Willis Brown of Erie, Pa., suggested that the *Journal* should be published at regular intervals, say quarterly or bi-monthly, instead of occasionally, as at present. He presented a resolution, which was adopted, that a committee should be appointed, consisting of the president, secretary and three other members, to perfect a plan for carrying out this suggestion.

A. M. Loudon of Cold Spring, N. Y., chairman of the Foremen's Section, made a short address, thanking the

association for opening its doors to foundry foremen, and introduced the newly elected officers of the Foundry Foremen's Association, as follows: President, Charles H. Thomas, Hay Foundry & Iron Works, Newark, N. J.; vice-president, E. P. Gilmour, Acme Harvester Company, Peoria, Ill.; secretary, James A. Murphy, Ball Engine Company, Erie, Pa.

Secretary Moldenke stated that he believed that the time had come for the association to acknowledge the indebtedness of the foundry trade to eminent men who had advanced its interests, and he therefore offered a resolution, which was unanimously adopted, that the following named be elected to honorary membership: Prof. Thomas Turner of the University of Birmingham, England, who was the first to present the relation of silicon to cast iron, and Prof. A. Liederbuhr of Freiburg, Saxony, the great German authority on cast iron.

A letter from Howard Evans, secretary of the Philadelphia Foundrymen's Association, was read, stating that Professor Holmes of the St. Louis Exposition had requested their association to assist in the organization of a model foundry plant, to be conducted at the exposition, the materials to be furnished by supply houses for the advertising they would receive, and a superintendent to be secured through Dr. Engler of the Worcester Polytechnic Institute. He asked the approval of the scheme, which was given by unanimous vote.

The selection of the place for holding the next convention was considered, and after some discussion of St. Louis and Indianapolis, the selection was left with the Executive Committee.

#### Election of Officers.

Wm. Yagle of Pittsburgh, Pa., chairman of the Committee on Nomination of Officers, presented a report, which was unanimously approved, naming the following list of officers, all of whom were duly elected:

President, Willis Brown, Walker Foundry Company, Erie, Pa.

Vice-presidents: First district, John Magee, Magee Furnace Company, Chelsea, Mass.; second district, J. A. Becket, Hoosick Falls, N. Y.; third district, John McLaren, Phillips & McLaren, Pittsburgh, Pa.; fourth district, A. K. Beckwith, Estate of P. D. Beckwith, Dowagiac, Mich.; fifth district, C. J. Wolff, L. Wolff Mfg. Company, Chicago; sixth district, Adam W. Blair, Chicago, Milwaukee & St. Paul Railway Company, Milwaukee, Wis.; seventh district, J. P. Golden, Golden Foundry & Machine Company, Columbus, Ga.; eighth district, T. J. Best, Warden, King & Son, Limited, Montreal, Canada.

Secretary and treasurer, Dr. Richard Moldenke, New York City.

The same committee also made the following recommendations which were approved: That Charles H. Thomas, Newark, N. J., be made chairman of the Foremen's Section and James A. Murphy, Erie, Pa., secretary; that W. G. Scott, Racine, Wis., be made chairman of the Metallurgists' Sections and H. E. Field, Ansonia, Conn., secretary; and that Mr. Field be selected by the Executive Committee as assistant to Secretary Moldenke.

President Brown expressed his appreciation of the honor bestowed upon him, and spoke at some length on the very promising future in view for the association. Secretary Moldenke also expressed his thanks.

J. S. Seaman of Pittsburgh stated that he was uttering the sentiments of all in attendance in pronouncing this convention the most successful in the history of the association. He offered a resolution, which was unanimously adopted, tendering the thanks of the association to the retiring president, A. W. Walker of Boston, and placing his name on the roll of honorary members. Mr. Walker accepted the honor, but said that the credit for the success of the convention should be given to the secretary, who had done all the work.

Resolutions of thanks to the foundrymen and citizens of Milwaukee were adopted, and the association adjourned *sine die*.

#### Outside the Convention.

The S. Obermayer Company, Cincinnati and Chicago, were well represented. S. T. Johnston of Chicago was in

charge of the interests of the company, supported by W. J. Adams, their representative in Milwaukee, James E. Evans of Chicago, Wm. M. Fitzpatrick of Pittsburgh, Martin Payton of Madison, Wis., and E. J. Woodison of Detroit. They maintained a headquarters in one of the parlors which was a popular gathering place. A stein bearing the company's name was given to every participant in the smoker on Wednesday evening as a souvenir of the occasion.

The Coburn Trolley Track Mfg. Company, Holyoke, Mass., represented by Fred. D. Thorpe and H. S. Parks, exhibited a full size section of their overhead tram rail for foundry use, equipped with a carrier of the standard pattern for handling ladles. The tram rail and carrier are designed to stand rough usage. All parts of the carrier, except the wheels, are hand forgings, and the tram rail is made of heavy sheet steel. The sheet steel, in forming the track, is pressed nearly square at the top, the sides turning under and inward at the bottom, thus providing a groove or trough on each side to support the double wheels of the carrier. Thus the carrier is inclosed within the track and cannot jump off, nor can the track become obstructed. The switches lock and unlock at one operation. This exhibit attracted much attention.

The Garden City Sand Company, Chicago, represented by Wm. Chambers and Chas. McNeal, distributed gilt match boxes.

Henry E. Pridmore, manufacturer of molding machines, Chicago, distributed souvenir pocket knives of fine quality and memorandum books of a superior grade. Mr. Pridmore was accompanied by an efficient staff of representatives comprising D. F. Eagan, R. E. Turnbull and E. H. Pridmore.

John S. McCormick and Thomas E. Malone of the J. S. McCormick Company, foundry supplies, Pittsburgh, Pa., distributed a highly appreciated souvenir, which was a book containing a reproduction of the group photographs taken at every preceding convention of the association.

The Dings Electro-Magnetic Separator Company, Milwaukee, Wis., distributed exceedingly neat gilt edged leather covered memorandum books.

W. F. Hyde of the Brand Stove Company, Milwaukee, Wis., distributed vest pocket lead pencils incased in nickel holders.

L. S. Brown of the Springfield Facing Company, Springfield, Mass., distributed fine leather coin purses.

The Winkley Company, Hartford, Conn., distributed samples of their brass dowel pins, mounted in wooden blocks to show their method of application and neatness of fit. They do not swell like wood pins, and can easily be removed if desired without injury to patterns.

#### Visit to the Allis-Chalmers Works.

The visit to the new works of the Allis-Chalmers Company, at West Allis, a suburb of Milwaukee, which was made on Wednesday afternoon, June 10, was greatly enjoyed by the foundrymen. They were first taken into the great erecting shop, necessarily of huge dimensions to accommodate the mammoth machinery of which the company are now foremost among builders. This shop has a height of 60 feet to the crane runway, yet this allows but little clearance for some of the lofty vertical engines now under process of erection. Among the engines on the floor in course of completion were the first of the leviathans for the New York subway, of 8000 indicated horse-power, and an efficiency of 50 per cent. more, and the last of 13 pumps for St. Louis, each of which has a capacity of 30,000,000 gallons in 24 hours. Other engines, fully as large, were in various stages of progress, while castings of enormous size were crowded all over the floor waiting to be assembled. Overhead two traveling cranes were in constant service, one of 75 and the other of 40 tons capacity. Opening into the side of the erecting shop were three very large buildings, running off at a right angle and separated from one another by a sufficient space to afford abundance of light. Two of these are used for machine shops and the third contains the blacksmith shop and the power house. These were visited in succession.

The first machine shop entered contained the very heavy tools, among them some of the largest of the kind

ever built. The work to be handled in this shop is on so large a scale that tools of even the largest size previously made were not capable of performing it. Therefore it was necessary to design bigger ones and have them built specially. Among these are horizontal mills which bore two cylinders at once and rotary planers with 10-foot heads. Two of these great planers are in use and have been nicknamed "the Dutch twins." The scene in this vast shop, with its array of huge machines, railroad tracks down the center, lofty roof, great lantern throwing a flood of light over the interior, mammoth traveling cranes running down the center and others serving the bays on the sides, forcibly reminds the visitor of the machinery section of an international exposition. The whole conception seems too big and on too grand a scale for a single manufacturing establishment. The power of some of the tools, as well as the quality of the iron used, is shown by the chips made, which are in some cases 10 to 12 inches wide, fully 1-16 inch thick and coil for 4 to 6 feet in length before breaking. This shop is fitted with a cast iron floor plate which excited great admiration. It is 200 feet long and about 30 feet wide, cast in sections about 9 x 10 feet in area and 12 inches thick, slotted in transverse parallels a few inches apart and supported on jack screws with sufficient space under and around them to enable the floor to be leveled if necessary. To this floor plate castings of any shape and size can be clamped, while tools can be picked up by the traveling cranes in any part of the shop, brought to the work and clamped by the side of it, to be operated by a motor. Several tools can thus be brought into action on a single casting at the same time and the work greatly expedited. Further, no time is lost in chucking as would be the case if the casting was taken to a tool connected to a shaft. Bed plates were observed which were being faced, drilled, tapped and slotted at the same time.

The second machine shop is of equally vast dimensions with the first, but the tools are not so imposing, as they are used for lighter work. The blacksmith shop is equipped for handling heavy as well as light work, having two large steam hammers. This shop is likewise of large dimensions to enable a good force of blacksmiths to be employed. The power house contains three direct connected generators, the largest being 750 kw. They are of varying size to enable the power to be used to the best advantage economically, as at times their full power is not needed. The spaces between these buildings are used for the storage of castings and other material and are served by traveling cranes which span the full space.

The foundry is parallel with the erecting shop and is located along the ends of the machine shops with a space between forming a yard, which is covered by traveling cranes. The foundry building is constructed with a high center and bays on the side, the interior being flooded with light from roof and sides. Traveling cranes run the full length of the foundry, but independently of them wall traveling cranes are used, which extend half way across, being supported by top and bottom rails located under the regular crane runway, so that they can run back and forth under the large cranes. Parallel with the foundry is the pattern shop, to which the visitors were taken and in which they were given a collation. They were then conducted to a suitable place on the grounds and a group photograph was taken.

The Eastern foundrymen were in no hurry to return home, nearly all of them stopping in Chicago for a day or two to visit places of interest. Prominent among the attractions were the foundries of the McCormick division of the International Harvester Company and of Henry E. Pridmore. In the McCormick foundries they saw mechanical appliances used on an extensive scale in the production of small castings, and in the Pridmore works they saw molding machines of a variety of patterns in process of construction.

Some of the foundrymen who had grown to be considered regulars, as they had attended every convention, were missing at this meeting. One of the most conspicuous of these was W. A. Jones of Chicago, a former president. Mr. Jones has not been in good health of recent years and now spends much of his time in Montana.

### The American Society for Testing Materials.

The sixth annual meeting of the American Society for Testing Materials will be held at the Delaware Water Gap, Pa., on July 1, 2 and 3. Among the reports of committees to be read are the following:

On Preservative Coatings for Iron and Steel, by S. S. Voorhees.

On the Magnetic Properties of Iron and Steel, by J. Walter Esterline.

On Standard Specifications for Cast Iron and Finished Castings, by Walter Wood.

Report of the Committee on Standard Specifications for Iron and Steel. William R. Webster, chairman.

Presentation of the Specifications for Iron and Steel Structures Adopted by the American Railway Engineering and Maintenance of Way Association in March, 1903. J. P. Snow, chairman.

Presentation of the Specifications for Locomotive Axles and Forgings Recommended by a Committee of the American Railway Master Mechanics' Association in June, 1903. H. F. Clark, chairman.

Presentation of the Specifications on Steel Rails Adopted by the American Railway Engineering and Maintenance of Way Association in March, 1902, and the Modifications Submitted in March, 1903. William R. Webster, chairman.

Presentation of the Manufacturers' Standard Specifications as Revised in February, 1903, and Their Comparison with Other Recent Prominent Specifications. Albert Ladd Colby.

A Brief Account of the History and Methods of the International Railway Congress. P. H. Dudley.

In What Respects Do the Requirements for Structural Steel for Bridge Building and Ship Building Purposes Differ? Topical discussion.

The Application of Nickel Steel. Topical discussion. This discussion will be opened by Charles B. Dudley, Albert Ladd Colby and John McLeod.

The Casting of Pipeless Ingots by the Sauveur Overflow Method. Albert Sauveur and Jasper Whiting. This discussion will be opened by Albert Sauveur, P. E. Carhart and Robert Job.

Alternate Stresses in Bridge Members. The discussion of this subject will be introduced by Gustav Lindenthal.

The Importance of Adopting Standard Sizes of Test Bars for Determining the Strength of Cast Iron. Alex. E. Outerbridge, Jr.

Machine Cast Sandless Pig Iron in Relation to the Standardizing of Pig Iron for Foundry Purposes. Edgar S. Cook.

The Physical Properties of Malleable Castings as Influenced by the Process of Manufacture. Richard Moldenke.

Cast Iron for Dynamo and Motor Frames. H. E. Diller.

Cast Iron (sub-title to be announced later). H. E. Field.

Discussion of the paper on "The Constitution of Cast Iron," presented by Henry M. Howe at the fifth annual meeting. This discussion will be opened by William Campbell, Richard Moldenke and Albert Sauveur.

Springs. William Metcalf.

The Master Car Builders' Drop Testing Machine as Installed at Purdue University. W. F. M. Goss.

The Control of the Finishing Temperatures of Steel Rails by the Thermo-Magnetic Selector. Albert Sauveur and Jasper Whiting.

A Direct Reading Apparatus for Determining the Energy Losses in Transformer Iron. J. Walter Esterline.

Stremmatograph Tests of Unit Fiber Strains and Their Distribution in the Base of Rails Under Moving Locomotives, Cars and Trains. P. H. Dudley.

The Strength and Other Properties of the Light Aluminum Alloys. J. W. Richards.

The Testing of Bearing Metals. G. H. Clamer.

**The Reeves Pulley Company.**—In the article published in *The Iron Age* of June 11, page 24, on "Changing a 55-Ton Four-Crown to a Single Crown Pulley," the address of the Reeves Pulley Company, who built the pulley, was omitted. They are located at Columbus, Ind.

### Permanent Molds.\*

BY JAMES A. MURPHY, ERIE, PA.

The casting of large work is at all times an interesting topic to foundrymen, particularly so in loam, when special well got up rigs are described. The art of loam molding has reached a wonderful degree of perfection in some sections of this country, and the best minds are directed to the saving of as much as possible of each

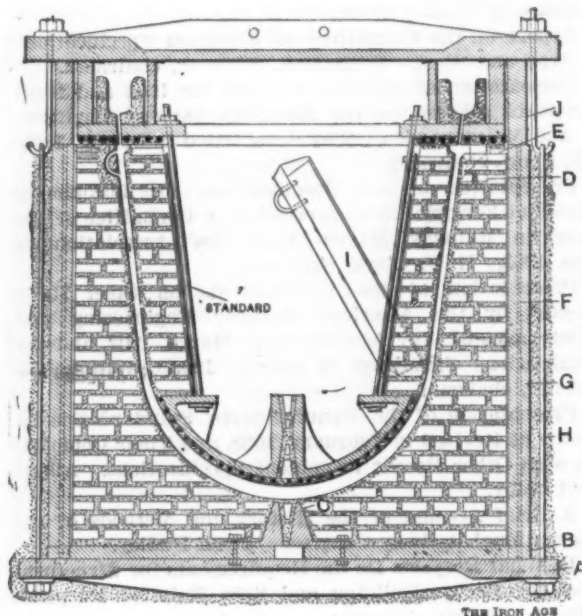


Fig. 1.—Sectional View of Mold for Making Large Kettle, Pipe, &c.

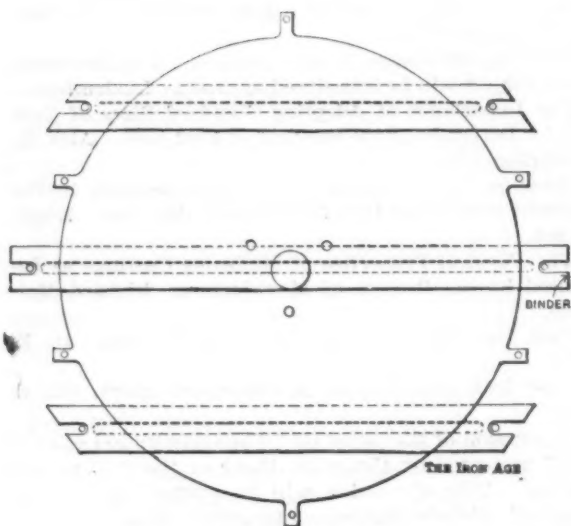


Fig. 2.—Bottom of Mold.

There are shops that make such castings in sand, but I consider them not up on the modern way of doing things. This kettle weighs about 14 tons and is made very quickly when the proper rigs and equipment are available.

The mold is absolutely permanent, the only preparation necessary being the daubing on of the loam and blacking it, and as the bricks are hot when in use a small fire placed inside of it will dry it thoroughly in a few hours. The core is swept up and is preferably dried in an oven. The whole core can be made of iron staves, but I consider the rig shown with the greater part of the core laid up with brick the quickest, safest and most satisfactory method.

To start the job we must dig a pit in the floor in some convenient place and make and set the binders A and bottom plate B, Figs. 1 and 2, as well as the spindle step C in which to set the mold sweep, Fig. 6. Bricks are then laid to the outline, allowing from  $\frac{1}{2}$  to  $\frac{3}{4}$  inch for loam. If the bricks are not of good quality it is best to have the face of the mold laid with fire bricks, using the common ones for backing. When built up to within about a foot of the top it is best to get on the octagonal lines and on the centers build in eight iron frames, Fig. 7, and D, Fig. 1, with liberal draft. In these can be set cores for handles, brackets or other external projections, and when the casting is taken out the wall will not be in the least disturbed.

On top of the wall lay a strong cast iron ring, Fig. 8 and E, Fig. 1, recessed on the octagonal lines sufficient to clear the iron boxes just mentioned, leaving space enough on top for a face of loam on the joint. This when bolted down firmly, F, Fig. 1, to the bottom plate will prevent the loosening of a single brick. The brick part of the mold being finished, the columns G and bolting rods H are placed, and the nature of the soil would have to determine whether a curbing was necessary or not before ramming up the mold permanently. Plenty of fine cinders should be used between the brick work, bringing all the

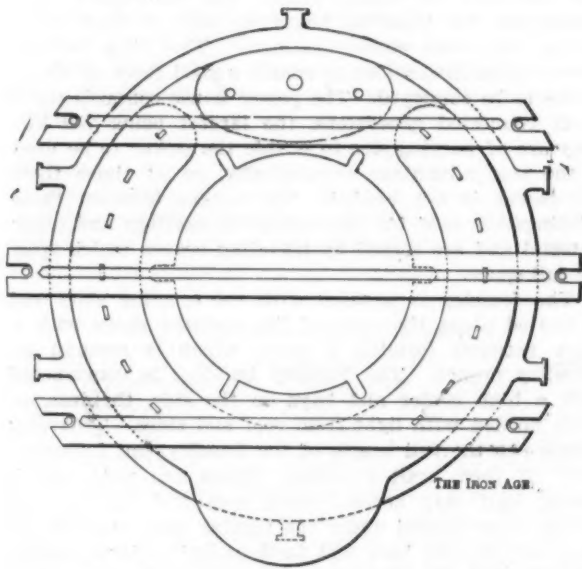


Fig. 3.—Top of Mold.

### PERMANENT MOLDS.

mold in order to reduce to a minimum the cost of all castings after the first. In other words, the permanent mold is the object sought.

It is a common argument against loam molding that its cost is too high, and I have no doubt but that this is true when work is made in loam that should be made in sand. As a rule those whom I have found prejudiced against loam on account of its cost knew so little about it that I could not consider them competent judges.

Large kettles, such as shown in Fig. 1, pans, domes, pipes, &c., are cheapest made in permanent loam molds. In some instances iron casings would be still cheaper.

\* A paper read before the American Foundrymen's Association, at Milwaukee, Wis., June, 1903.

gases to the outside of the wall quickly where provision should be made to convey them away.

For the core it is best to make one or more crown plates, X, Fig. 5, and I consider the one shown an improvement on any similar "get up" that I have seen. It is the cheapest and best when swept up in loam with a straight hole cored through its hub, which can afterward be machined to suit the taper of the spindle. It can be laid on the roll over plate Y, Fig. 5, spindle set in and plumbed true, loam rubbed on, swept and finished. When hardened with a fire basket it can be turned over, set in the form as shown in Fig. 4, spindle set in the other side and the building of the core proceeded with. To provide for shrinkage and prevent extra labor and save some

bricks from being badly broken, it is handy to build in a splitting bar, I, Fig. 1, which can be easily pulled away with the crane after pouring, allowing the wall to give with the contraction of the casting.

When the core is built an iron lifting ring is secured on top of it, and by means of this it is set on a form similar to Fig. 4 on the oven carriage. When dry this is taken away and the flat top plate J, Figs. 1 and 3, lowered on it, and the core bolted securely to it. The whole thing is lifted by the top plate and closed by the center lines. I prefer running this on top similar to the way shown, each gate being stopped until the runner is full.

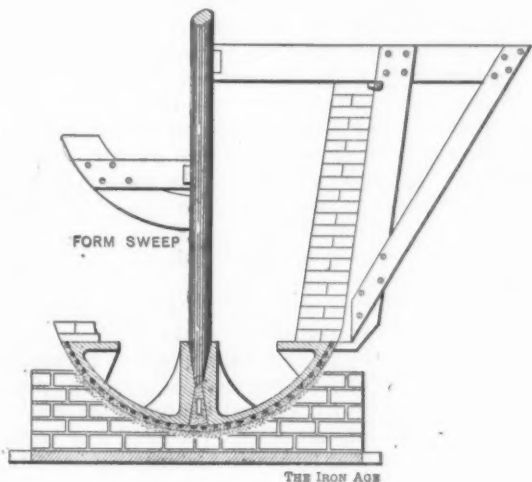


Fig. 4.—View Showing Support for Core in Sweeping Up.

possible mistake by other than the grossest carelessness. It is, however, advisable for the foreman to keep an eye to starboard in any case, as I recollect a case where, after everything was seen to and considered safe, the unlooked for happened. It seems that a bag of hay used by the molder as a seat for the ladder was forgotten by him in the mold at the last moment. Of course the casting was lost by having a large hole in its bottom, all of which makes one wish that the molder had forgotten to come out also.

Difficulty is being experienced in getting firemen for the mastodonic locomotives of the present day by reason of the arduous nature of the work. On some roads the men have to handle from 25 to 35 tons of coal on one run over a division, so that in a round trip they move 70 tons of coal. The mere physical labor involved in doing this is tremendous, but, in addition to that, they have many duties to attend to. It is not wonderful that, as *Locomotive Engineering* says, the men are completely played out. Even in this condition they are liable to be

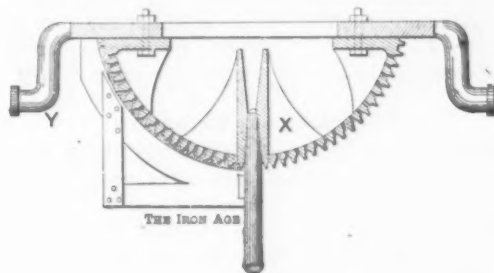


Fig. 5.—Crown Plate and Roll Over Plate for Core.

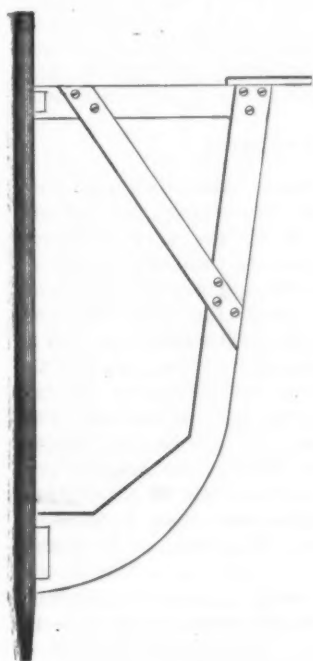


Fig. 6.—Sweep.



Fig. 7.—Iron Frame.

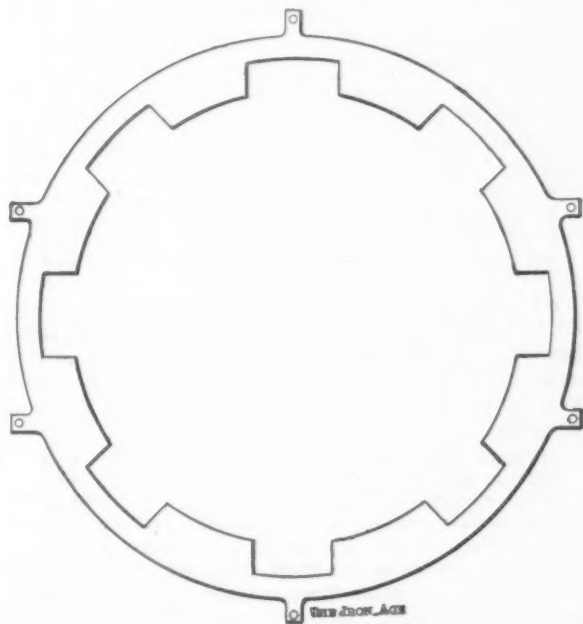


Fig. 8.—Ring for Top of Wall.

#### PERMANENT MOLDS.

Risers left open to relieve the pressure of air prevent the back kick and thus obviate the wrinkles that would mar the appearance of the casting, particularly so if the metal was not very hot. The riser basin should be ample and be so arranged that it can be flowed off to take away the metal from the runner so as not to have a heavy piece of scrap to break.

The mold is thoroughly secure and not much more costly than if only one casting was intended to be made. As shown it will last for several years' continuous service. Any shop equipped for large work should, with a rig of this kind, turn out one of these kettles every few days. As thus arranged it is seldom that a first-class workman need be put on the job, everything being made to prevent

called a few hours later to go on duty again. Two men are needed on the monster engines to keep them going, and there would be plenty of work for both. No one knows this better than the superintendents of motive power, and why they do not insist upon adequate crews for the large locomotives is a question to be answered by them.

J. M. Dashiell, who has represented the Harrison Safety Boiler Works of Philadelphia, under the title of the Dashiell Engineering Company, is now placed in charge of the Baltimore section. The New England office will be continued under the title of the Harrison Safety Boiler Works, with John Hickey as manager.

## The Iron Industry of the Birmingham District.\*

BY S. S. KNIGHT, BIRMINGHAM, ALA.

Nothing could more forcibly impress upon the mind the importance of the iron industry in this country than the consideration of the facts that during the year just passed the amount of pig iron alone produced was conservatively valued at \$270,000,000, in the manufacture of which over 500,000 people were continuously employed, while the subsequent refining and elaboration of this material furnished occupation more or less directly for no less than 4,000,000 wage earners. Nor does the importance of this industry diminish when it is considered that at least \$750,000,000 are invested in the coal, ore and limestone properties, coke ovens and furnace plants which are the necessary factors in the manufacture of pig iron.

The conditions which favor the commercial production of pig iron are large deposits of coking coal, iron ore and fluxing materials in close proximity to each other. And all of these crude products of the mines must be of such chemical composition as to be suitable for use, as the character of the pig iron will be very largely determined by the composition of the materials from which it is made.

### Coal and Coke Resources.

The areas underlaid with fuel in the Birmingham district are distinctly divided into three great coal fields, the largest of which is now almost equal to the Connells-ville in its celebrity, while the quantity of coal available in it is vastly greater than that in the Pennsylvania field. This Warrior field has an area of over 7800 square miles, in some places as many as seven seams being workable, while some single veins have over 7 feet of clear coal, and in places 12 feet of coal occur with less than 6 inches of parting. It is estimated that this field contains no less than 30,000,000,000 tons of coal, which would be about equal to a block of coal having a base of one square mile and each of whose lateral faces was a mile and four-fifths high. Practically every acre of coal in this field is admirably adapted for coking purposes, although as a steam coal it has almost no equal. The better grades will analyze about as follows:

|                      |       |
|----------------------|-------|
| Moisture .....       | 3.50  |
| Volatile matter..... | 30.00 |
| Fixed carbon.....    | 61.50 |
| Ash .....            | 4.50  |
| Sulphur .....        | 0.75  |

While the sulphur, as a rule, runs fairly high in this coal, it is in such a chemical combination that it is easily disposed of by washing the slack, and by this method furnace coke is produced of a very satisfactory grade. As a usual thing such coke has about the following composition:

|                      |       |
|----------------------|-------|
| Moisture .....       | 1.00  |
| Volatile matter..... | 1.50  |
| Fixed carbon.....    | 85.00 |
| Ash .....            | 12.50 |
| Sulphur .....        | 0.85  |

Coke, however, is produced from coal found in this field which when made from washed slack has an analysis about as follows, and is well suited for foundry work even in the production of very thin castings, which must necessarily be soft:

|                      |       |
|----------------------|-------|
| Moisture .....       | 0.50  |
| Volatile matter..... | 4.00  |
| Fixed carbon.....    | 85.00 |
| Ash .....            | 10.50 |
| Sulphur .....        | 0.51  |

A glance at the composition of this coke will show that it is equal chemically to the best produced in West Virginia, while it is superior to that made in Pennsylvania or Virginia. In physical structure it is somewhat inferior to the best Northern brands, and it is much to be regretted that as yet but little of this coal capable of producing the above coke has been mined, although it is known to cover a large area. The coals found in the Warrior field are generally of a quality but little suited for domestic use, which is largely due to the fact that they have a

decided tendency to disintegrate when exposed to the air for any considerable period of time, particularly if left uncovered to the sun and rain.

The two fuel sections of secondary importance in the Birmingham district are the Cahaba field to the south of the Warrior, which covers about 400 square miles, and whose available coal is estimated at about 3,000,000,000 tons, and which is generally of excellent character either for the production of gas or domestic use, and the Coosa coal field, which is of about the same area as the Cahaba, but whose available coal is estimated at 450,000,000 tons, the most of which is capable of producing an excellent grade of furnace coke.

In this connection it is of interest to know that Alabama has now built and in blast no less than 7500 coke ovens, 450 of which are of the by-product type, and whose production of coke for the last year was over 2,200,000 tons, practically all of which was used in the Birmingham district. Nor should Alabama be ashamed of her fuel record as made with modern furnace equipment, where less than 2300 pounds of coke were used to make a ton of foundry pig iron, when it is remembered that the ores used yielded but 45 per cent of iron in the furnace. The cost of producing coal in this district, on board cars at the mine, would not exceed 75 cents per ton, while the cost of producing coke during the year 1902, including railway transportation from the mine to the coke ovens, did not average over \$1.90 per ton, notwithstanding the fact that only 63 per cent. of coke was produced from a given quantity of coal charged into the ovens. Some idea of the amount of coke produced may be formed when it is known that last year Alabama reported 10,330,000 tons of coal mined; while fuel was shipped to both the Atlantic and Pacific seaboards, besides being exported to Mexico and Central America. Some idea of the size of the coal deposits in this district may be obtained when the fact is considered that at the rate of consumption of bituminous coal for last year, 250,000,000 tons per annum, the district could supply the entire country for 1340 years, should fuel mining operations in all other fields cease.

### Iron Ore Resources.

From an economic standpoint Alabama's iron ores readily divide themselves into two classes, the red and brown ores. The former are by far the more important, since they are so persistent, and are available in such an enormous quantity. Geologically they are in the Clinton formation of Silurian time, being far below the coal measures, and their strata vary in thickness from 4 to 30 feet and dip usually less than 20 degrees toward the southeast. Their persistence is well shown by the fact that in one locality an entry has been driven over 1000 feet into the vein without any decrease in its thickness being observed. These strata outcrop continuously over a distance of more than 25 miles, while in some places ore is being taken out within less than 7 miles of the tipples of the coal mines. This red ore is further distinguished as either hard or soft, according to the chemical composition and physical constitution, the hard ores being more or less self fluxing, owing to the presence of about 15 per cent. of lime. The average analysis of each character of material is about as follows:

|                  | Hard ore. | Soft ore. |
|------------------|-----------|-----------|
| Iron .....       | 38.00     | 47.50     |
| Alumina .....    | 3.00      | 3.50      |
| Silica .....     | 13.50     | 17.00     |
| Lime .....       | 16.00     | 1.00      |
| Water .....      | 0.50      | 7.00      |
| Phosphorus ..... | 0.30      | 0.35      |

The phosphorus in the red ores will vary from 0.25 to 0.40 per cent., but in no case has it ever been found below the malleable limit. Such an enormous amount of this ore is available that it has been estimated that if all of the coal which now lies in the State were turned into coke, but half of this deposit of ore would be used when all of the fuel was exhausted in the production of pig iron. So close to the furnace does this ore lie and so thick are the veins that it has been placed in the furnace stock houses for less than 70 cents per ton, while it is probable that, even with the high rate of wages prevailing last year, its average cost at the furnace was not

\* Paper read before the American Foundrymen's Association, Milwaukee, Wis., June 9 to 11, 1903. It was illustrated with lantern slides showing the principal works in the district.

over 90 cents per ton. As ordinarily used, this ore constitutes between 75 and 90 per cent. of the furnace burden.

The brown ores, which are either carbonates or hydrated oxides of iron, constitute less than 25 per cent. of the bulk of the ores mined in the State, although it is from them that the best foundry iron is made. Since they lie entirely in pockets their continuity is at best a matter of speculation, which usually turns out to be unfortunate for the mine operator. Owing to this formation the ore is always more or less mixed with clay and dirt, which necessitates washing before using in the furnaces. This materially adds to the cost, which, however, is partly offset by the greater quantity of iron which they contain. An average analysis would be about as follows:

|                        |       |
|------------------------|-------|
| Hygroscopic water..... | 5.00  |
| Combined water.....    | 6.00  |
| Iron .....             | 49.00 |
| Silica .....           | 10.50 |
| Alumina .....          | 3.50  |
| Lime .....             | 0.50  |
| Sulphur .....          | 0.10  |
| Phosphorus .....       | 0.40  |

This ore varies in its phosphorus content from the Bessemer limit to 1.25 per cent, while samples have been met with which carried from 0.60 to 2 per cent. of manganese. The cost of brown ore averages about \$1.25 per ton in the furnace stock houses, where the haul is short, and up to \$2.25 per ton, where the mines are located 100 miles away from the point of consumption. It may be well here to remark that furnaces using all brown ore have always been able to obtain a better price for their product upon the market, owing to the fact that the same grade of brown ore iron is much stronger than the similar grade of red ore iron, providing the elements other than carbon and iron are about in the same proportions in their respective compositions. This is largely due to the fact that brown ore reduces much higher up in the furnace, and thus acquires more carbon as it descends into the crucible through the incandescent fuel. It has repeatedly been the writer's experience that, when castings suddenly lose their strength, although the foundry mixture and the grade and brand of coke have not been altered, the cause usually can be readily found by an investigation on this point. With such a difference in the price of the two ores, it can be readily seen why some furnacemen would feel influenced toward making a change in their ore burden. The quantity of ore mined in the district during the last year was something in excess of 3,000,000 gross tons.

#### Lime and Magnesia Supply.

The occurrence in enormous quantities of carbonates of lime and magnesia in the Birmingham district has been one of the factors tending toward its marvelous growth and its increasing industrial importance. Within a distance of less than ten miles from the outcrop of a 25-foot vein of ore and the entrance to a coal mine having a 7-foot seam is to be found practically an unlimited supply of the purest dolomite, whose analysis is about as follows:

|                             |       |
|-----------------------------|-------|
| Silica .....                | 1.00  |
| Iron oxide and alumina..... | 0.50  |
| Carbonate of calcium.....   | 54.50 |
| Carbonate of magnesium..... | 43.50 |

It is the character of this deposit and its prevalence in this district which make the future of Birmingham certain from a steel making standpoint. Basic iron is easily produced when this material is used as flux in the blast furnace. The cost of this material in the furnace stock houses does not exceed 50 cents per ton, while within 75 miles of the city are found such large deposits of limestone as to insure for thousands of years a sufficient supply of this material, the average analysis of which is about as follows:

|                                |       |
|--------------------------------|-------|
| Silica .....                   | 3.00  |
| Oxide of iron and alumina..... | 1.00  |
| Carbonate of calcium.....      | 96.00 |

This material would cost, when placed in the stock house, not to exceed 65 cents per ton.

#### Extent of the Blast Furnace Development.

Coming now to the actual producers of pig iron, we find that 23 years ago there were but four blast furnaces

in the district, two being located at Oxmoor and the two Alice stacks within the city limits of Birmingham. Both of these plants are at present in operation, the latter having for many years confined its production almost exclusively to basic iron for steel purposes, no small amount of which has been shipped to Pittsburgh.

During the eight years directly previous to 1888 21 furnaces were built and put in blast in Jefferson County, all of which are within 15 miles of Birmingham, and only one of which is not at the present time in operation. During the year 1900 the largest iron producer in the South was erected, being placed in blast the following spring. To-day there are in blast in the immediate district 26 furnaces, while there are in various parts of the State, more or less immediately adjacent to the district, no less than 24 other pig iron producers. Last year Alabama made almost 1,500,000 gross tons of pig iron, while the prospect so far this year points toward a decided increase in production.

Within the last few years the physical condition of the plants in the district has been greatly improved, while the advance in furnace practice has kept well apace. Where in some of the older plants it takes nearly two tons and a half of coke to produce a ton of iron, and single stacks give a daily output of 150 tons, the latest addition to Alabama's list of furnaces has made iron with less than 1.2 tons of fuel while producing at the rate of 335 tons per day. It will be noted that the pig iron industry of this district is no longer in an experimental stage nor in its infancy, since during the year 1900, which was the last that the price of iron on the home market permitted of any being exported, out of a total of 286,000 gross tons exported by this country Alabama shipped 238,000 tons, or nearly 84 per cent.

The cause of this is readily apparent, since besides cheap fuel, ore and flux, transportation rates were in effect whereby it was possible to ship to Liverpool for \$3.25 per ton. The movement of cotton is the only condition which allows of such rates being named; hence the advantage which this district possesses over all other pig iron producing sections when competing for export trade. The breadth of the market reached by Birmingham iron is almost as extensive as the location of civilized man, since shipments have been made to England, France, Holland, Norway, Switzerland and Austria in Europe; India, China and Japan in Asia; Australia; Argentina and Brazil in South America, besides Cuba, Mexico and the Hawaiian Islands.

#### The Steel Industry.

In March, 1888, in the Henderson Steel & Mfg. Company's plant, at North Birmingham, was made the first steel produced in this district. While this plant was purely an experiment, and has since entirely ceased operation, the Birmingham Rolling Mill Company, now a part of the Republic Iron & Steel Company, have been commercially manufacturing basic open hearth steel for over six years. They have two furnaces, which have an output of about 50 tons per day. The ingots cast here are bloomed down and rolled into merchant shapes in their adjoining mill, which has a capacity of 500 tons of merchant bar iron daily, made from their puddling furnaces in this plant. This same company operate a mill at Gate City, a suburb of Birmingham, which has a capacity of 100 tons of merchant bar per day. These plants, together with the bar and plate mill of the Tennessee Coal, Iron & Railroad Company at Bessemer, and the tube mill of the Alabama Tube & Iron Company at Helena, represent the puddling branch of the iron industry of this district.

At Ensley the Tennessee Company erected their steel mill some four years ago, which has a capacity of 1000 tons of basic open hearth steel per day, while the ten 50-ton furnaces are supplemented by a 44-inch blooming mill and a rail mill. The fuel for this plant comes from the company's Pratt mines, less than three miles away. The metal is brought directly from the Ensley furnaces, which are also owned by the Tennessee Company, in 100-ton ladles, while a portion of the billets produced go to the adjoining rail mill and the remainder to various mills of the district. Foremost among these stand the rod and nail mill of the Alabama Steel & Wire Company, less than

500 yards distant. This plant has a capacity of about 100 tons per day, and the same company are at present constructing four blast furnaces and a steel mill at Gadsden, less than 65 miles from the city of Birmingham, and therefore properly in the district. And it should be noted that not even the furnace slag will be allowed to go to waste, as at the present time the Southern Cement Company are producing about 300 barrels per day of a high grade of Portland cement from this blast furnace refuse and native limestone.

#### Other Features of the District.

It has been recently estimated that the iron foundries of this district consume no less than 500,000 tons of pig iron annually. Among the more prominent of these, on account of the high grade of finished machinery which they turn out, are several concerns manufacturing Corliss engines and sugar house machinery. Besides these engine builders there are three water pipe plants, with a capacity of no less than 150,000 tons per annum; eight soil pipe plants, with a capacity of 40,000 tons per year; one car wheel plant, one stove foundry and three boiler shops, besides numerous smaller foundries.

As much as the Birmingham district already has, she lacks some important elements tending to her complete success in the iron industry. Chief among these is a malleable iron plant, nor are there any reasons apparent why she should not have one. There have already been produced in this district over 3000 tons of pig iron whose phosphorus was below the Bessemer limit, and there are two well-known ore deposits whose phosphorus is easily below the malleable limit, while a smaller quantity of ore has been prospected which contains over 38 per cent. of manganese. About 350 miles away are the phenomenally low phosphorus magnetic ore deposits of East Tennessee and Western North Carolina, and in this locality malleable pig iron of high reputation was produced for years. That fuel nowhere in this country could be cheaper nor transportation rates from any point in every direction more favorable are facts too well known to be questioned.

With the opening of the Warrior River to navigation, which it is estimated will be accomplished within the next two years, and the building of the canal across the Isthmus of Panama this district will then be placed in a position to dispose of its product in any quarter of the globe, wherever the market conditions are most advantageous. When the former of these undertakings is completed it will be possible to place coal at the docks in Mobile at a cost of considerably less than \$2 per ton, which will make this city decidedly the cheapest fueling port in the Western Hemisphere.

Whatever may come to pass, one thing is absolutely certain, and that is that the position which the Birmingham district has attained in importance in the iron world in time past will never be receded from, but will seem the smallest beginning when the industrial activity in this line is reviewed again a century hence. Its possibilities from the viewpoint of economic geology and geography will never permit it to lose any of the prestige which it has gained, while conservative business methods and careful management should make it rival the foremost iron producing centers of the world.

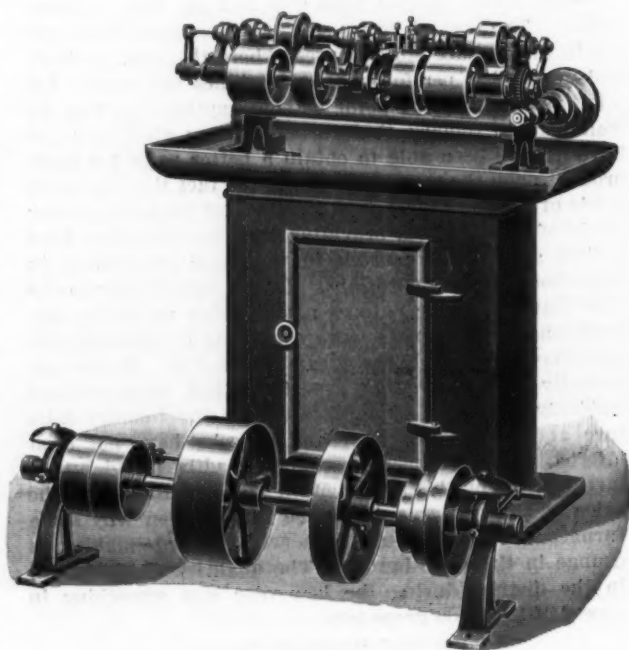
**The John Fritz Iron Mine.**—We are advised by Oliver Williams of Catasauqua, Pa., president of the Cuban Mining Company, that an error slipped into the description of the John Fritz iron ore mine in the article on the Iron Ore Deposits of Cuba, published in *The Iron Age* June 4, page 16. The report makes the ledge "25 feet long above the ground." This should read 2500 feet. The vein is traced for 7500 feet.

The Chicago House Wrecking Company have purchased the Ferris Wheel which was one of the features of the World's Columbian Exposition at Chicago in 1893. This wheel cost \$362,000 and its successful construction was a feat in engineering. After the close of the exposition it was removed to a plot of ground in the north-

ern part of Chicago named Ferris Wheel Park, and for several years continued to be a means of entertainment. It ceased to be a novelty, however, and the revenue from visitors failed to reimburse the owners. The new purchasers have not announced what they propose to do with it. The amount realized was very small, being about \$2000.

#### The Barr Automatic Pin Machine.

H. G. Barr of Worcester, Mass., is putting on the market a new automatic pin machine for metal workers, designed to make any kind of a straight or shoulder pin that can be formed with two tools up to  $\frac{1}{4}$  inch in diameter and 2 inches in length. The stock is fed through the hollow head spindle until it is held in two chucks, and from the fact that it is supported at both ends while working the cutting tool is permitted to pass the center, resulting in finished work. After the stock is cut off the finished part is automatically ejected from the supporting spindle, the chuck being opened by a cam operating a spool, the usual motion in screw machines.



THE BARR AUTOMATIC PIN MACHINE.

There are two swinging rests for tools, working with cam motion from opposite sides, the tool on the back tool post being inverted, thus giving to the forming tool its proper position. The machine is exceedingly rapid in operation and can be run at any speed that the tools will permit, there being three changes of speed to the cam shaft. Twenty small pins a minute are being made with one of these machines, and it is claimed that the product is at least equal to that of screw machines. The pulleys on the spindles are 4 inches in diameter with  $1\frac{1}{2}$  inches face and those on the countershaft are 12 inches in diameter. The cam shaft and spindles run in bronze boxes. The chucks are of hardened tool steel. A shelf for tools and the oil tank are inside the base, and an oil pump properly piped is furnished with each machine. The weight complete with countershaft is 900 pounds and the speed of the countershaft is 350 and 400.

All the members of the council of the American Institute of Mining Engineers have signed a circular addressed to the members favoring the acceptance by the institute of Andrew Carnegie's gift of an engineering building. Members are asked to vote on the question, and to authorize amendments to the rules to permit the incorporation of the institute and the possible appointment of trustees.

## Lake Superior Mining Notes.

### Projected Canadian Ore Roads.

DULUTH, MINN., June 13, 1903.—Marks & Wiley of Port Arthur, Ont., are applying for a bonus from the Canadian Government in aid of a proposed railway, the Nepigon & Iron Range, which they state they are desirous of building if they can get sufficient aid. They have taken large tracts of land near Black Sturgeon Lake, northwest of Lake Superior, on which are said to be deposits of iron. Lands in that region have been taken up by a number of interests, chiefly Canadian, and it is absolutely necessary, if they are to be developed, that railway connection shall be had. Not sufficient exploration has yet been carried out to determine satisfactorily whether there is great value or not, though the owners are very enthusiastic.

Another railway project for the north shore of Lake Superior, also seeking aid from the Canadian Government, is the Nepigon Railway, which it is proposed to build from Lake Superior to the discovered ore fields east of Nepigon Lake. This is in the hands of James Conmee, a well-known politician, and others. So far as explorations east of Nepigon have been made public they have shown a large district carrying ample indications of iron, much ferruginous slates and rich jasper, but little merchantable ore. More extended and thorough explorations may, of course, change all this, but several of the leading companies in the field have pulled off for the present at least and are not now interested actively in the district.

The continental hight of land intervenes between the Black Sturgeon and Nepigon sections. On the latter the best talent, both American and Canadian, has been at work in the past two or three years, and the results have not, as is said above, been distinctly encouraging. In the Black Sturgeon region, on the other hand, but little work has ever been done, and that little somewhat cursorily. Indications are claimed to be most flattering. Nothing is doing now in some of the better known and more important Canadian districts on Lake Superior, the Atikokan, Mattawin and others.

### Mesaba Range.

A sale referred to some months ago as then pending has now been closed. It is the east half of the southeast quarter of section 6-57-20, and is on the terms then stated in this correspondence, a 10-cent advance royalty above the 25 cent State lease, a 100,000-ton minimum on the advance and a \$40,000 cash bonus. The ostensible purchaser is the Great Northern road. Explorations by the option holder have doubled the quantity of ore in sight when the deal was instituted, and there are now 3,000,000 tons of ore better than 53 per cent. shown up. In some ways this is one of the most remarkable sales yet made on the range.

The Republic Iron & Steel Company, operating the Franklin group, the Pettit and Kinney mines of the Mesaba and the Cambria and Lillie of the Marquette, are shipping more ore this year than last. Their old Victoria stockpile, Franklin group, containing 50,000 tons and which has been on surface for five years, is all being moved forward and the remainder of the group is shipping smartly. Their Pettit will produce more than in 1902, when it was opened, and their Kinney is preparing for a large output. It has been under development as a stripped mine since last fall. Their Cambria and Lillie will not make a large shipment this year, but they will greatly increase production from their Iron Mountain, Menominee range, silicious ores. These mines were bought from the Antoine Ore Company last winter. The same company may also buy the Warren ore find, adjoining their Kinney mine.

Stephens mine of the Oliver Iron Mining Company is now making its first shipments to dock. It is a very large and magnificently opened and equipped property, development of which has been proceeding quietly and easily by the Oliver company for the past two years. A very large area of ore is stripped, and mining will be at an exceedingly low cost for a long time. The equipment in and surrounding the mine is nothing short of superb

and reflects the highest credit on the company's management. Stephens ore was a few years ago thought to be low grade, and it was taken by the Oliver company when others did not care for it. The wisdom of the lessees is now manifest. The royalty is 15 cents a ton and the annual minimum is 100,000 tons. A tonnage making it one of the largest mines of the range has been shown, and the ore is of magnificent physical and good chemical character. The land is owned by Henry Stephens of Detroit, Mich., who took it years ago for the pine alone and whose estate will now receive \$15,000 a year for several hundred years if merely the minimum is mined.

Two State leases in sections 23 and 24, 57-22, have been explored to show about 4,000,000 tons of ore. One of these showed the ore under from 70 to 125 feet of hard taconite, which is an unusual thickness for drilling. Ore has been found a short distance southwest of Hibbing on lands belonging to the Eddy Brothers of Michigan, under 150 feet of taconite, but the extent of the body is not yet fully known. Taconite is drilled more and more every year, and the depth to which exploring companies will now go seems almost unwarranted in some cases. It is a difficult matter to tell what may be under this rock from examination of the rock itself, and about the only safe way, where the taconite looks at all favorable, is to go down. A drill hole was put down more than 400 feet in taconite in the southeast quarter of section 16-58-19 without result, and others have gone even further.

Longyear Lake, in sections 21 and 28, 58-20, will probably be drilled if title can be given. Ore exists on two sides of it, and it is believed by some that it may be under the lake, which is a shallow body of water.

The engineering department of the Northern Pacific road has decided to commence explorations on Mesaba lands owned by it, and is arranging for drills therefor. Lands owned by the road, coming to it from the land grant of the old St. Paul & Duluth road, probably contain much ore.

No. 3 ore dock of the Great Northern road, at Superior, is completed this week and shipments over it commence immediately. It is 73 feet high from mean water level, 63 feet wide, and has 160 pockets of 250 tons capacity each. It gives the road a storage capacity for 170,000 tons, putting it on an equality with the Duluth & Iron Range and Duluth, Missabe & Northern.

### Gogebic Range.

Palms mine has, after a long period of work, opened into a body of ore under No. 1 shaft, adjoining the Anvil ground, and an extension of the Anvil lens. Palms has been an active mine, but for some years has been diminishing in tonnage quite rapidly. The new ore body will renew its lease of life. This ore was 400 feet under the bottom of No. 1 shaft. All the buildings at old Meteor mine, near Wakefield, have been sold and are to be removed, so that the location will be entirely desolated. Meteor's career is completed. Gogebic range shipments are now about 100,000 tons a week, which will be the average throughout the season.

### Menominee Range.

The Wisconsin & Michigan road will be a candidate for ore traffic another year, and will further divide what was the Northwestern's exclusive territory up to two years ago. Development in Columbia mine is abandoned and the equipment, other than sufficient for taking out what ore is in sight, is being taken out of the mine. Explorations have commenced immediately south of Dunn mine to test the formation where pits showed mixed ore in considerable quantity. The Pewabic Company have ceased all exploration in the Iron River district and have sent drills and outfits to Commonwealth and Nanaimo mine, where they are working now. On section 6, at Norway, the Buffalo & Susquehanna Company are soon to ship a stockpile left by former operators and are sinking a shaft and installing a crusher. On the east side the section ore is being stripped by John Cuff. At Crystal Falls the Genesee portion of Tobin mine will soon be hoisting through the new shaft. Old Carey shaft has been completed and equipped, and the entire group assumes the importance forecasted in this correspondence some months ago. A lot of building will take place at

this mine. For Bristol mine its owners will erect a number of dwellings at Crystal Falls.

#### Copper Notes.

The hoisting of copper rock has ceased at the famous Arcadian mine at Hancock, Mich. Exploratory work on the property will be carried on thoroughly for a long time, and it is hoped that the mine may some time give good account of itself. The company own 4000 acres within the copper bearing belt and are engaged in making a complete cross section of the formation by diamond drill. This will require two years' time, and anything may happen in the way of finding profitable copper bearing rock.

Arcadian is famous in the Lake Superior copper country as a Standard Oil Company proposition, for the magnitude of surface and underground improvements and for the rapidity with which the property was opened and for the poverty of its rock. Five years ago this month the present owners reorganized the old properties, on which much money had previously been spent and from which 600 tons of copper had been mined, and they at once began a career of costly construction that has, perhaps, never been equaled in a mine, certainly not in this part of the world. Great mine buildings and shops of stone and steel, a magnificent and splendidly equipped stamp mill, a railway, a town of 200 houses with all modern conveniences, with two parallel streets each more than a mile long, powerful water plants, docks and terminals, rose as by magic.

Underground as much as 1800 feet of opening work was done in a single month, a proceeding unrivaled except by Calumet & Hecla. Seven shafts were sunk to great depth; in all 15,000 feet of sinking and drifting were done in the first eleven months of operations, 1600 men were employed in and about the property, and the cost of the development could not have been less than \$2,500,000; probably it was more. Machinery plants, Nordberg hoists, compressors, boilers, crushers, are as fine as any ever built, and the three-stamp mill is a triumph of scientific practice. But they never found enough copper to make a paying proposition. For some time the mill has been working on rock from various more successful mines, and one head is now stamping Trimountain rock. One head may begin crushing Centennial rock in the near future.

#### Mining for Coal.

Two companies have been formed in Minnesota to mine for coal in northern Aitken County, south and west of the westerly end of the Mesaba iron bearing formation. This is, geologically, a region of glacial drift and till, and is near what was the eastern shore of a great post-glacial lake. The coal so far found is a lignite, said to be of fair quality. Developments have not been long enough under way to determine much as to the extent and value of the finds that have been made. One of the two companies is exploring on State land, the other on land owned in fee.

#### Big Cargo Records.

Revision of cargo records on the great lakes is in progress constantly now. Last week the steel ship "I. L. Elwood" broke all records by a cargo of 8578 net tons of iron ore from Duluth to Lake Erie. Now this is beaten by her sister ship, "Wm. Edenborn," with a cargo of 8656.48 net tons. This was carried on a draft of 18 feet 5 inches forward and 18 feet 10 inches aft, which would equalize at the Sault to about 18 feet 6 inches. This is slightly better draft than was permissible last year, and begins to approach the draft for which such ships were built. The three equivalent ships, "Wm. Edenborn," "James J. Hill" and "I. L. Elwood," left Duluth Friday last with a combined cargo of 25,524 net tons, which is the greatest load ever taken by three ships on the lakes. These three ships, with the "J. W. Gates," were built under the direction of A. B. Wolvin of Duluth for the American Steel & Wire Company, and fully justify the wisdom of Mr. Wolvin's apparently revolutionary step. They are still under his management as parts of the United States Steel Corporation's fleet.

Lake vessel records now stand as follows: Steamer "Wm. Edenborn," Duluth to Lake Erie, 7729 gross or

8654 net tons ore; barge "John Smeaton," Two Harbors to South Chicago, 7652 gross or 8570 net tons ore; steamer "S. J. Murphy," Chicago to Buffalo, 269,000 bushels corn, or 7532 net tons; steamer "Douglas Houghton," Manitowoc to Buffalo, 308,000 bushels oats and 60,000 bushels, or 7520 net tons; steamer "I. L. Elwood," Buffalo to Duluth, 7688 net tons hard coal; steamer "J. W. Gates," Lorain to Duluth, 7659 net tons soft coal. It is worthy of remark that every one of these records is held by a ship owned by the United States Steel Corporation. D. E. W.

## Hearings by Supervising Marine Inspectors.

### Manufacturers Suggest Important Changes in Boiler Regulations.

WASHINGTON, D. C., June 16, 1903.—The conference of the Supervising Inspectors of the Steamboat Inspection Service, called by the Secretary of the Treasury for the purpose of preparing a comprehensive revision of the regulations, including the requirements with respect to the construction and inspection of boilers, has been in session throughout the past week and hearings have been given to leading representatives of the boiler making and steel manufacturing interests of the country. The hearings have now been closed, although the board is still prepared to consider any written statements that may be presented, and the information thus far obtained has been distributed to subcommittees for careful examination and recommendation.

#### Views of Boiler Manufacturers.

The special committee appointed to consider suggestions with regard to the provisions of the boiler regulations consists of Supervising Inspectors Robt. S. Rodie of New York, chairman; John D. Sloane of Dubuque, Iowa, and John A. Cotter of New Orleans, La. Following the appointment of this committee a hearing was given to E. D. Meier, president of the Heine Safety Boiler Company, and chairman of the Committee on Uniform Boiler Specifications of the American Boiler Manufacturers' Association. While expressing his appreciation of the skill and special qualifications of the supervising inspectors, Mr. Meier said that he was nevertheless of the opinion that Congress should pass such a bill as was favorably acted upon by the Senate at the last session, authorizing the Secretary of the Treasury to appoint a special commission of experts, representing all interests involved, to revise the laws and regulations of the steamboat inspection service with special reference to boilers. It was an imposition upon the Board of Supervising Inspectors, he thought, to ask them to undertake a task of such magnitude, which would probably occupy them for at least six months. The business of their respective districts must be attended to and there would not be time to deal with all these important subjects. He understood, of course, that the board was expected to make recommendations concerning the revision of the laws, even with respect to boiler regulations, but he trusted that the members would not feel called upon to take any action that would conflict with the plan of the American Boiler Manufacturers' Association for the appointment of an expert commission. Such a commission, he thought, should be composed of experts representing various lines, including designers of boilers and engines, owners and masters of vessels, the Navy Department, the Revenue Cutter Service and the Board of Supervising Inspectors. It would be necessary that the navy should be consulted, because the merchant marine in case of war would be called into service as an auxiliary, and uniformity in the requirements of construction between the merchant marine and the navy would be essential to efficient service. In conclusion, he pointed out the importance of properly regulating the relative strength of the shell of the boiler and that of the bracing, and he also emphasized the importance of amending the requirement concerning the double inspection of steel plates and tubes employed in repair work now required.

At the conclusion of Mr. Meier's remarks there was considerable discussion between members of the board as

to whether, under the instructions embodied by the Secretary of the Treasury in his letter convening the conference, it was mandatory upon the board to revise the regulations without reference to the bill pending in Congress. The opinion was generally expressed that it was the duty of the board to prepare a revision based upon such information as it could secure, and Mr. Meier and other representatives of the boiler and steel plate manufacturers were invited to present suggestions in writing. On behalf of the Committee on Uniform Boiler Specifications of the American Boiler Manufacturers' Association Mr. Meier submitted the following suggestions:

This committee considers the provision at present existing in regard to the physical test of steel boiler tubes as unjustly and unnecessarily discriminating against them, since no such test is required for iron boiler tubes. We recognize that some years ago, when this rule was adopted, there was some doubt about the quality and sufficiency of steel boiler tubes. But since then the manufacture of steel tubes has been so much improved and their use has been so general as to largely exclude iron tubes from the market. We respectfully ask you, therefore, to rescind this rule and give the steel tube the same advantage under your rules as the iron tube has always had.

Mr. Meier pointed out that this recommendation was in direct line with the purpose of the Secretary of the Treasury to bring the boiler regulations up to date and in line with the vast improvements in the manufacture of boiler plates, tubes, &c., that have taken place since the original code of the steamboat inspection service was drafted.

#### Suggestions from Steel Manufacturers.

A delegation, including John McLeod of the Carnegie Steel Company, president of the Association of American Steel Manufacturers; P. E. Carhart of the Illinois Steel Company and George N. Riley of the National Tube Company, was then heard on the subject of the specifications covering steel plate. Mr. McLeod, who acted as spokesman, presented the following statement:

Referring to the subject matter of discussion during the hearing granted the American Boiler Manufacturers' Association, we as the American steel manufacturers request that you consider the following suggestions with respect to certain rulings governing the manufacture of steel plates for boilers subject to the rulings of your board:

1. We would respectfully request that the ruling whereby material that has been inspected and accepted at the point of manufacture is not at present permitted to be used without further inspection and tests at certain destinations be changed and a ruling adopted whereby material tested, accepted and stamped by your representatives may be used in any of your districts wherever such material may be found. This ruling we understand will apply to all material, whether ordered for repair work or for new work. We would respectfully request, further, that this ruling should apply to plates ordered by boiler manufacturers to be carried in stock for repair purposes.

2. We would request that the present ruling requiring that a test be made on each individual plate ordered be changed to permit the acceptance of plates on tests of individual plates as rolled, which, interpreted, means one test for each slab rolled, no matter how many plates may be cut from the plate that may be rolled from said slab.

3. We request that the ruling whereby a plate for a certain purpose is not permitted to be more than 31-100 inch in thickness be changed so that a plate ordered by a boiler manufacturer of a steel manufacturer would be accepted provided the gauge did not go more than 3 per cent. below or 5 per cent. above the ordered gauge.

We submit the foregoing for such action as your honorable body may take, but we would like to request that the suggestions offered above be adopted for the reason that our association feels confident it would be for the best interests of all concerned.

A communication was also presented to the board from the William Cramp & Sons Ship & Engine Building Company, which was in part as follows:

We have been subjected to a great deal of useless annoyance by reason of the present laws and regulations for the inspection of boilers. We consider that the whole system of Treasury rules and regulations as now in force is in an extremely muddled condition. These rules and regulations were made a long time ago, and such additions have been put on them from time to time as could be gotten through Congress or adopted by the Board of Supervising Inspectors. As a result a combination of rules has been compiled which in some cases are at variance with each other and are totally inadequate for the purpose intended.

We would suggest that the way to reform these rules would be for the Secretary of the Treasury to create a board of three or more prominent engineers of the country, which board should be empowered to call in any such extra assistance as it may

require to formulate a thoroughly intelligible set of rules which would be similar to the rules governing the construction of marine steam boilers and engines throughout the world.

On the completion of these rules the board would go out of existence. These rules and regulations drawn up by this board of engineers should, upon the approval of the Secretary of the Treasury, have the force of law. Subsequently, if important modifications were required the Secretary of the Treasury should reconvene the board and submit the suggested modifications for action. Upon their recommendation the Secretary of the Treasury should, as at present, issue orders making the changes or modifications. These rules should be adopted by the underwriters' associations, which should demand conformity to them before granting insurance. These rules should relate to strength of important parts of engines as well as boilers.

#### An Expert Commission Urged.

The overshadowing importance of the appointment of an expert commission to revise the boiler regulations has been impressed upon Secretary Shaw by representatives of boiler manufacturers in all parts of the country. President John O'Brien of the American Boiler Manufacturers' Association, in an urgent letter to the Secretary, has reminded him that he concurred in the association's recommendations with regard to a bill authorizing the appointment of this commission, and that through the Department's influence, as well as that of the association, a satisfactory measure was passed by the Senate last winter but failed of enactment in the House. The measure did not pass the House, Mr. O'Brien says, because that body was under the mistaken impression that the Secretary of the Treasury could appoint such a commission without special authority. An appropriation to pay the expenses of the commission was necessary, however, and Congress having failed to provide such funds the Secretary could not act. Mr. O'Brien states that the Boiler Manufacturers' Association is more firmly convinced than ever of the desirability of the commission referred to and hopes that Secretary Shaw will renew his recommendation when Congress reconvenes. Similar recommendations have been made to the Department and to the Board of Supervising Inspectors by the Jones & Laughlin Steel Company, the Lukens Iron & Steel Company and other manufacturers of boilers, steel plates, tubes, engines, &c.

It is probable that the Board of Supervising Inspectors will remain in session until after the end of the current month. Attention is therefore called to the following notice to manufacturers and others issued by Secretary Shaw, inviting suggestions concerning changes:

The Department, being in receipt of numerous letters from the large marine boiler manufacturing companies throughout the United States and many other marine associations as well as individuals interested in the marine laws and rules and regulations of the steamboat inspection service, calling for a revision of many of the rules and regulations governing the construction of marine boilers, and relating to the inspection of vessels and licensing of officers, also the inadequacy of the present laws to meet the requirements of the growing marine interests of the country, has deemed it advisable to call an extra session of the Board of Supervising Inspectors of Steam Vessels to meet in the city of Washington, for the purpose of joint consultation relative to revising the said rules and regulations, and to consider and recommend to Congress at its next session such revision of the laws as may be necessary to meet and carry out in the most effective manner the intent and purpose of the provisions of Title LII relating to the steamboat inspection service. With a view to obtaining all the information possible, and to meet the wants of all concerned, the Department extends to all interested an invitation to suggest to the Board of Supervising Inspectors at this extra session, either in person or by written communication, such changes as they may deem of a character worthy of consideration.

It is expected that the board will act, favorably or adversely, upon all recommendations that are submitted, including suggestions that may involve modifications of existing law, as to which the action of the board will take the form of a recommendation for additional legislation. Should the regulations as finally revised by the board fail to meet the views of the manufacturers of boilers, steel plates, &c., Secretary Shaw will then consider a request for a recommendation to Congress from the Department looking to the passage of a bill authorizing the appointment of an expert commission. W. L. C.

Robert de Rothschild, Conrad Schlumberger and Jean Siegler of the Ecole des Mines, Paris, mining and metallurgical engineers, are in this country studying its resources and methods.

# The Iron Age

New York, Thursday, June 18, 1903.

|                         |           |                   |
|-------------------------|-----------|-------------------|
| DAVID WILLIAMS COMPANY, | - - - - - | PUBLISHERS.       |
| CHARLES KIRCHHOFF,      | - - - - - | EDITOR.           |
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| RICHARD R. WILLIAMS,    | - - - - - | HARDWARE EDITOR.  |
| JOHN S. KING,           | - - - - - | BUSINESS MANAGER. |

## The Iron Age Directory, 1903.

The seventh annual edition of THE IRON AGE DIRECTORY is now being sent to each subscriber. It is a classified index of the goods manufactured by advertisers in *The Iron Age*, their number being upward of 1400. Covering the entire range of products of the iron, metal, machinery and hardware trades, the Directory affords an exceedingly convenient means of ascertaining who are the most progressive makers in the different branches of the great metal industry. The classification is very full and comprehensive, which may be judged from the fact that it embraces over 5000 headings. The preparation of the little, neatly bound book has involved much care and labor, there having been brought to bear upon the work the experience acquired in compiling the three previous editions. We present it to the subscribers of *The Iron Age* in the belief that it will deserve a place in every well organized office and will be found of constant use.

### Small Branch or Independent Banks?

In marked contrast to the general tendency toward concentration of capital and consolidation of interests is the multiplicity of small independent banks being organized throughout the country under the national system as revealed in the recent report of the Comptroller of the Currency. The large increase in the number of small banks, however, is due rather to the conditions imposed by the national banking law than to a lack of desire for consolidation of widely distributed banking units. This leads us to again consider some of the defects of our otherwise admirable banking system.

The organization of banks of small capital in small communities has no doubt been brought about by a demand for such financial institutions arising from the development of local natural resources. Such banks fill a want in the community and to that extent are an aid to business, but were it possible to create branches of large banks in these same communities the interests of the people would be as well if not better served in that a greater degree of safety would be provided in time of financial stress when all credit systems are subjected to strains of more or less force. Indeed, branch banks of large institutions could offer equal if not greater facilities and be more economically managed than can small independent banks, which are loosely connected, at the best, with large banks in reserve cities, the latter having no voice in the management of the small units.

The Comptroller of the Currency shows in his report that during the month of May 47 banks were organized with a capital of only a little more than \$2,500,000, as 25 of the new banks were of the class that are not required to have more than a capital of \$25,000 each. Since the refunding act of March 14, 1900, became effective—permitting the organization of banks of \$25,000 capital in places of not more than 3000 inhabitants—1540 national banking institutions have been organized, a net gain of 1337, with an increase of \$132,223,000 in the aggregate

capital. It is interesting to know that of the 1540 organizations since March 14, 1900, 1015 are of the class of small banks, and their total capital is only \$26,520,500. At the end of May the total number of national banks in the United States was 4953, with an aggregate capital of \$748,531,695, and circulating notes of \$363,586,987 secured by \$367,827,920 bonds on deposit. During the month of May the greatest activity in the organization of new banks was in the Southern States, where 15 banks were organized with a capital of \$925,000.

Of the national banks organized some half dozen banks were converted from the old State bank system. But it is significant to note that the number of banks organized under State laws throughout the country is still larger than the number of national banks created. Indeed, the State institutions seem to be a greater menace to our financial system than are banks under the national system, in that not a few of the State institutions are organized with a capital of \$10,000 or less and are given but indifferent supervision. Under the national system banks are subjected to close and careful examination, but with a multiplicity of small banks, widely scattered, subject to frequent changes in management, with a peculiar character of resources and liabilities, depending upon location, the supervision is less effective in practice than in theory.

Banking is probably the most sensitive business in the world, being responsive to the slightest current sent along the electric wires of credit which connect intimately all parts of the financial community. Strength and stability are its foundation stones, and more than any other business it is dependent upon the integrity of its working force and the skill of its management. The very elements of which it is formed, it is readily seen, make a concentration of interests not only desirable from the standpoint of the banking institutions, but would best serve the interests of the community in which its remotest ramifications might be centered. Competition would not be strangled, and no monopoly of the business is possible.

In so far as the national system puts a premium upon the incorporation of small independent banking associations and fails to provide for the establishment of branches or agencies by the larger units—in other cities—it fails to provide for the best interests of the community. Industrial and commercial needs have changed so essentially in the past few years that it now seems desirable that the banking act should be modified in this respect. Among the admirable features of the national banking law, however, are the general freedom allowed in the incorporation of banks; in the requirement that all capital shall be fully paid in; that a surplus of at least 30 per cent. of capital shall be accumulated, and that a cash reserve shall at all times be held against deposit liabilities.

Of course, in times of prosperity, such as have been experienced in the last five years, the defects of our banking system are not readily apparent, and only in times of financial crises or panics will the full test of the efficiency and stability of small banks—which have been created so rapidly and with facility during the last three years—be made.

### Malleable Castings in the Stove Trade.

Among the interesting discussions at the Milwaukee convention of the American Foundrymen's Association was that which followed the reading of Dr. Richard Moldenke's paper on malleable cast iron. The stove trade were well represented among the foundrymen present,

and they plied the author with numerous questions relative to the fitness of malleable iron for stove castings. The use of malleable iron in the production of ranges especially has increased quite considerably in recent years, and those who adhere rigidly to gray iron for stove plate are nevertheless inclined to look closely into the reasons which have prompted the use of malleable iron, so that they may not make a serious mistake and be left in the rear by more enterprising manufacturers, provided that malleable castings are really preferable for use in this manner.

The trend of the discussion on this occasion was, however, rather unfavorable to the use of malleable iron. Dr. Moldenke, who is a recognized authority in the malleable trade, stated that while he believed that a promising field existed in its use in the manufacture of stove legs and other parts requiring strength, and not carrying considerable ornamentation, he could not see very much of a future in its use for stove plate. It is not so capable of withstanding the effects of intense heat as gray iron, and in the annealing process the sharpness of outline so desirable in the fine molding now used in making stove plate is largely lost. Even in the parts requiring strength he was of the opinion that pressed steel might ultimately be found as satisfactory as malleable iron, and would perhaps win preference on account of its lightness.

Referring to the use of malleable iron for water backs or water fronts in ranges, one of the stove manufacturers present stated that the experience of his company had been very unsatisfactory. They had been induced to try malleable castings for this purpose and sent out several thousand ranges fitted with them. Complaints of their bad condition then began to come in and eventually the company were obliged to replace all of them. The cause of the trouble in this case was leakage owing to rust, malleable iron oxidizing much more rapidly than gray iron.

The fact, nevertheless, cannot be lightly dismissed that malleable iron is making distinct headway in displacing gray iron in the manufacture of stoves. It may not be suitable for water heaters, and it may not be adapted to purposes of ornamentation or to the construction of parts subjected to intense heat, but its superior strength constitutes a very good "talking point" for those who are seeking every possible advantage over their competitors. The pioneers in this direction were able to sell their goods at high prices by demonstrating the ability of their ranges to be thrown from a wagon to the ground without breakage, and such parts as lids, for instance, to be struck with sledge hammers without cracking. Such evidences of durability were sufficiently convincing to effect sales, and other manufacturers have met with commercial success in working along the same lines. That the movement in this direction is growing is demonstrated by the fact that manufacturers who have hitherto adhered rigidly to gray iron for cast parts of their stoves and ranges are looking into processes for the profitable production of malleable castings on the limited scale suited to their requirements. It appears to be a condition which is confronting the stove trade and not a theory. This may be another instance in which practical progress defies the experts.

William Putnam McFarland of Chicopee Falls, Mass., president of the Belcher & Taylor Agricultural Tool Company, died at his home Thursday, June 11, at the age of 85 years. Mr. McFarland was born in Sturbridge, Mass., February 4, 1818, the son of a village blacksmith. When a boy he learned the trade of machinist and worked at it until 1856, the last 13 years at the Armory at Springfield, Mass. In that year he ventured into partnership with his brother, a manufacturer of

card setting machinery at Worcester, Mass., but after a year he entered the employ of the Maynard Arms Company of Washington, D. C., to superintend the manufacture of the Maynard rifle and shotgun by the Massachusetts Arms Company at Chicopee Falls, who had a contract for 5000 Maynard guns. Later he was engaged with Thomas Carter in the manufacture of the Maynard rifle. Although president of the Belcher & Taylor Company, he had not been actively engaged in business for some years.

### Steam Turbines for Philadelphia Subway.

One of the largest contracts for steam turbine and electrical power machinery recorded in American territory has just been closed by Westinghouse, Church, Kerr & Co., with the Philadelphia Rapid Transit Company, covering 15,000 kw. of steam turbine and approximately 50,000 kw. of electrical generating and converting machinery, for equipping the new rapid transit subway and elevated system now under construction in Philadelphia. The most interesting feature of the equipment to be installed is that steam turbines are to be used exclusively for power generation in the new central station now under construction. There will be three turbines installed, each of 5000 kw. normal capacity, which will be of the type now being built by the Westinghouse Machine Company for large powers. The turbines will be direct connected to Westinghouse three-phase 25-cycle generators, and the units will run at 750 revolutions per minute, with 175 pounds of steam, 27½ inches vacuum and possibly 100 to 150 degrees of superheat. The three units will operate in multiple upon a common bus bar, and power will be distributed directly at a nominal potential of 13,000 volts from the station, without the use of any intermediate transformers; for this purpose the generators are wound for high potential.

The new power station will be located upon the Delaware River, near the foot of Green street, and is laid out for an ultimate capacity of 50,000 kw., it being the idea of its designers to concentrate at this point the entire power generating equipment at present distributed among a number of smaller stations. The location of the new station upon the river bank secures excellent coaling facilities and an inexhaustible supply of water for condensing purposes.

The present equipment will furnish power for the subway and some reserve power for the surface traction system pending the execution of proposed plans for centralizing the entire power system.

The contract also comprises a large amount of transforming and converting machinery, to be installed in the several substations, which will be built at various locations in the district covered by the transit system. This machinery will be used for converting the high tension A. C. power received from the power station into low potential direct current for use directly upon the third rail of the traction system. The first installation will comprise 14 1000-kw. and two 500-kw. rotary converters. Each of the 1000 kw. rotaries will be furnished with 3-375 kw. stepdown transformers, and each of the 500 kw. rotaries with 3-175 kw. transformers of similar design. The electrical equipment will be built by the Westinghouse Electric & Mfg. Company.

The new rapid transit system, now under construction, will cover the entire business district of Philadelphia, and includes a two and four track subway about 1¼ miles in length, extending from the Delaware River along Market street to a point near Twenty-third street, a short distance from the Schuylkill River. At Broad street an appropriate central terminal station will be erected. The enterprise is one of the most important in the history of American railway development, and the introduction of the steam turbine in such large sizes is particularly gratifying by reason of the confidence shown in this comparatively new type of prime mover.

A. J. Lindemann of A. J. Lindemann & Hoverson Company of Milwaukee, Wis., has been appointed a member of the Wisconsin State Board of Managers of the St. Louis Exposition.

## Iron and Steel Protection in Canada.

TORONTO, June 17, 1903.—On Tuesday night the leader of the Opposition in the Dominion House of Commons introduced his resolution calling for higher duties on iron and steel. Notice of this resolution had been given upward of a week before, and the Government was consequently prepared for its consideration by the House. In presenting it Mr. Borden made a considerable survey of past tariff legislation affecting iron and steel, and dwell upon the conditions that now prevail in the industries producing these commodities. His resolution was as follows:

"This House is of opinion that the tariff of customs duties should give such protection to iron and steel industries as will not only secure to our own producers and manufacturers the Canadian market in articles now produced or manufactured in this country, but will also develop and sustain the manufacture in Canada of other iron and steel products which at present are imported in large quantities from other countries. And that the present tariff of customs duties should be now readjusted on this principle."

He gave statistics to show what protection has done for the iron and steel industries of the United States and Germany. Like these countries Canada has all the requisite natural advantages, her only lack, he maintained, being adequate protection. In the fiscal year ending with last June the importations of iron and steel into Canada were as follows:

|  | Tons of<br>2,000 pounds. | Value.       |
|--|--------------------------|--------------|
| Pig iron.....  | 40,014                   | \$585,803    |
| Scrap cast.....  | 3,048                    | 39,958       |
| Scrap (wrought), billets and blooms.....   | 55,761                   | 938,941      |
| Rails.....   | 130,602                  | 2,953,230    |
| Wire rods and their products.....  | 92,919                   | 3,593,851    |
| Sheets of all kinds, tin plate, &c.....  | 63,390                   | 3,385,208    |
| Bars, round, flat, and small sections, &c.....   | 62,441                   | 2,549,669    |
| Plates.....  | 30,301                   | 905,183      |
| Plates, universal.....   | 3,593                    | 101,682      |
| Plates, agricultural.....  | 2,336                    | 178,704      |
| Pipes, boiler tubes, &c., but not pipe 2½<br>inches diameter and over, for mining..... | 12,071                   | 841,670      |
| Structural shapes, &c.....   | 28,011                   | 789,644      |
| Hoops, &c.....   | 2,080                    | 96,728       |
| Ships' plates, angles, &c.....   | 1,786                    | 70,707       |
| Skelp.....   | 16,195                   | 496,130      |
| Totals.....  | 544,548                  | \$17,527,108 |

The total importation of iron and steel and manufactures of, June 30:

|               |              |
|---------------|--------------|
| 1902.....     | \$33,681,625 |
| 1896.....     | 10,203,052   |
| Increase..... | \$23,478,573 |

The imports of 1896 are brought into comparison with those of the latest complete fiscal year because the former was the last year of the higher duties on iron and steel.

To account for the backward state of the Canadian iron and steel industries Mr. Borden pointed to the extraordinary prosperity of the iron and steel industries of the United States—themselves an effect of protection and a source of crushing competition to producers in this country. Canada, he held, must give protection equal to that given in the United States. At present the duties in the two countries compare as below:

|  | Canadian.   |               | American.        |
|--|-------------|---------------|------------------|
|  | Per cent.   | Per ton.      | Per ton.         |
| Pig iron and scrap cast.....                             | 2.50        |               | \$4.00           |
| Billets and blooms.....                                  | 2.00        |               | 6.00             |
| Scrap (wrought).....                                     | 1.00        |               | 4.00             |
| Rails (tramway rails, &c.).....                          | 30 or 7.50  |               | 7.00             |
| Rails.....   | Free        |               | 7.00             |
| Wire rods.....   | Free        |               | 8.00             |
| Barbed wire.....   | Free        |               | Per lb.<br>*1¼c. |
| Galvanized spring.....                                   | Free        |               | *1¼c.            |
| Wire spring.....   | Free        |               | *1¼c.            |
| Wire fencing.....  | 15 or 10.80 | 1¼c. or 25.00 |                  |
| Wire, covered.....                                       | 30          | 45 p. c.      |                  |
| Wire, N.O.P.....   | 20 or 10.80 | 1¼c. or 25.00 |                  |
| Wire for ships.....                                      | Free        | 1¼c. or 25.00 |                  |
| Canada plate, Russia iron, galvanized<br>sheets, &c..... | 5 or 2.63   |               | *18.00           |
| Sheets, 17 gauge and thinner.....                        | 5 or 2.55   |               | *14.00           |
| Sheets, corrugated.....                                  | 30 or 3.46  |               | *14.00           |
| Tin plates (sheets).....                                 | Free        |               | *30.00           |

|   |             |              |
|---|-------------|--------------|
| Billets and flat spring.....  | Free        | *6 and 10.00 |
| Spiral spring.....  | Free        | *10.00       |
| Steel and wind mills, &c.....   | Free        | *10.00       |
| Steel under ½ inch diameter.....  | Free        | *12.00       |
| Steel bars.....   | 7.00        | 12.00        |
| Steel shafting and forgings.....  | 30          | †.....       |
| Steel fish and tie plates.....  | 8.00        | 8.00         |
| Steel angles, less and 35 lbs. per yard ..                                | 7.00        | 10.00        |
| Plates.....   | 7.00        | *10.00       |
| Plates not less than ¼ thick.....   | 10 or 2.93  | *10.00       |
| Plates, universal or rolled edges.....                                    | 10 or 2.83  | *10.00       |
| Plates, agricultural.....   | 5 or 3.80   | *10.00       |
| Skelp for pipe.....   | 5 or 1.50   | *10.00       |
| Tubing for boilers.....   | 5 or 3.75   | *40.00       |
| Tubing under 2 inches diameter.....                                       | 35 or 22.75 | *40.00       |
| Tubing, N.O.P.....  | 30          | 35 p. c.     |
| Tubing.....   | Free        | 40.00        |
| Tubing over 2 inches diameter.....  | 15 or 9.60  | 40.00        |
| Angles, tees, beams, &c., weighing<br>over 35 pounds per lineal yard..... | 10 or 2.85  | 10.00        |
| Hoops, 18 gauge and thinner.....  | 5 or 2.30   | *12.00       |

\* And higher. † Shafting 45 per cent., forgings 35 per cent.

To show the reduction that had been made in the Canadian duties in 1897, Mr. Borden presented side by side those that were in force up to that year and those now in effect. They compare as follows:

|  | Tariff<br>1894. | Tariff<br>1897. | Dec.    |
|--|-----------------|-----------------|---------|
|  | Per ton.        | Per ton.        |         |
| Pig iron.....  | \$4.00          | \$2.50          | \$1.50  |
| Scrap (cast).....  | 4.00            | 2.50            | 1.50    |
| Billets and blooms.....  | 5.00            | 2.00            | 3.00    |
| Scrap (wrought).....   | 4.00            | 1.00            | 3.00    |
| Steel bars.....  | 10.00           | 7.00            | 3.00    |
| Steel fish and tie plates.....   | 10.00           | 8.00            | 2.00    |
| Steel bands.....   | 10.00           | 7.00            | 3.00    |
| Plates.....  | 10.00           | 7.00            | 3.00    |
| Steel shaftings and forgings, 35 per<br>cent. or not less than.....              | 15.00           | 30 p. c.        | 5 p. c. |
| Steel angles less than 35 pounds per<br>yard, 35 per cent. or not less than..... | 10.00           | 7.00            | 3.00    |
|  | Per ct.         | Per ct.         | Per ct. |
| Plates not less than ¼ thick.....  | 12½             | 10              | 2½      |
| Tubing for boilers.....  | 7½              | 5               | 2½      |
| Angles, tees, beams, &c., weighing<br>over 35 pounds per lineal yard.....        | 12½             | 10              | 2½      |
| Plates, rolled edges.....  | 12              | 10              | 2½      |
| Barbed wire.....   | ¾               | Free            | ¾       |
| Galvanized wire.....   | 20              | Free            | 20      |

Mr. Borden remarked that the iron tariff of the United States is very complex, having been very carefully thought out, so that in all cases it was not possible to make a precise comparison.

Referring to the bounties, which are now being scaled down, he said he did not consider it possible to get the industries permanently established without customs duties of a protective character.

Mr. Borden's closing remarks were as follows:

I recognize the fact that in dealing with the duties upon iron and steel the Government would be obliged to give consideration to other industries in this country, and probably to revise our tariff in respect to many articles into the manufacture of which iron and steel enter. So far as we on this side are concerned we are not afraid of that position. We believe that there should be such a revision of tariff generally, and not limited to iron and steel, and if the Government should decide to give some measure of increased protection to the iron and steel industry and finds it necessary to make some revision of the tariff in connection with articles into the manufacture of which iron and steel enter, we on this side will be glad to lend them a helping hand and support them in the measure of protection to those industries which we think the true interests of this country demand.

Considering the importance of this industry, I say that even if it should prolong this session to a greater extent than anticipated, even if it should involve a more complete revision of the tariff than might occur to one at first blush, I say that, having regard to the condition of affairs in this country at present, the Parliament of Canada could do no better work than give attention to the revision at once. The homes of 10,000 or 15,000 people may depend on the action which the Government will take. A very important industry in the province of Nova Scotia may come to a standstill, a very important industry in the West may have to cease operations. I question if honorable gentlemen in this House adequately realize what a blow it would be to the future of Canada not only of the iron and steel industry, but of Canada as a whole, if these industries in which so many millions of dollars have been invested in the past few years should come to a standstill. No one can overestimate what it would mean to this country should that come to pass. No one can exaggerate what effect it might have upon general financial conditions if that should happen, and I therefore say that if this amendment of mine calling for increased protection to the iron and steel industry should involve a somewhat gen-

eral revision of the tariff, the Parliament of Canada could not do better work this summer than devote its attention to this subject. I do not know that there is one honorable gentleman in this House who is not so seriously impressed with the present condition of affairs that he would not be willing to sacrifice some of his time and comfort for the purpose of remaining here even longer than we anticipated in order that a measure of protection to this industry might be given.

Mr. Fielding, the Finance Minister, opposed the resolution, declaring that the matter was brought forward at an inopportune time, and that it could not be regarded as other than one of want of confidence in the Government.

Sir Wilfrid Laurier, the Premier, stated that the Government's policy was expressed in the tariff of 1897. Protection had been tried, he said, and had proved fruitless of benefit to the iron and steel industries. The industries had never before thrived, he maintained, as they have done since the duty was lowered. Complaints there are, he admitted, from one company in one province. Continuing, he said:

Let us come at once to the question before the House. There has been a good deal of excitement about it during the past few days. A great company, which was started with a great flourish, and which was supposed to be doing a good business, has, I am sorry to say, been the object of a good deal of stock speculation, and that great company has practically admitted that it is not in good financial condition. And if the whole truth must be told—and this is the secret of the member for Cape Breton, Dr. Kendall, a secret, however, which is well known—that company has come to us recently asking for an increase in the tariff. While I have never hesitated to say I am a free trader by conviction, and while at the same time I have favored a tariff policy such as we have at this time—that is to say, a tariff for revenue purposes, carrying with it a good deal of incidental protection—at the same time I am not dogmatic. I am not a doctrinaire, and the Government is not a Government of doctrinaires. We are always ready to listen to complaints when they are made to us. When an industry, no matter what it may be, comes to us to make representations, we are bound to listen. We are bound to hear all complaints. We are bound to give a sympathetic ear to all who come with grievances, if grievances they are.

But when a company comes to us in this way we have a right to expect that it will give a statement of their affairs. Not only this, but show wherein the conditions under which they are working are deficient. They must show why it is they have come to grief and why the expectations they have entertained have not been realized. When this industry was before Parliament in 1899 and when the Minister of Finance, the Hon. Mr. Fielding, introduced the bounty system, which was accepted on both sides of the House unanimously as far as voting went, and with very little exception as far as speaking went, it was expected that the industry would be able to produce iron at \$6 a ton. Instead of producing iron at \$6 a ton they have produced it at a very much increased figure.

We have a right to know from them how it is that their expectations have not been fulfilled and the prospects they announced to the public have not been realized.

We have the right to know, also, how their position can be remedied by a change in the tariff. We have a right to know whether or not it is the cause of their disasters. We have a right to know whether it is the cause which has brought them to the position in which the company now are or whether it is some cause other than the tariff.

Therefore, is it not the part of statesmanship, is it not the part which the Government should take, to see where we stand and whether or not we can remedy this condition of things?

Within four days we have had these representations made to us, and I do not betray secrets, I will not surprise any one by saying, that we asked the gentlemen who came to us to give us a statement in black and white which we could study before we made up our minds whether or not we are to make any changes in our fiscal policy or allow it to remain as it is. This is the position in which we are at the present time. Yet we are asked by gentlemen on the other side of the House to rush into a change in the tariff and come down with a different policy. I say that before we can come to any such conclusion we must look into the question.

It is a time not for action but for consideration, reflection and study. This is the position we take. This is the duty which is imposed upon us and it is the duty to which, at the present time, we are devoting ourselves. This is the reason the Minister of Finance said this motion comes at an inopportune time.

You had better wait. It will be the duty of the Government by and by to go into committee of ways and means. Then it will be for us to state the position we take before Parliament and the country. In the meantime, as the gentlemen opposite pretend not to be actuated by any desire to make political capital out of the question, it seems to me that the best thing they can do is to withdraw the motion so that we can look into the matter and come to a conclusion.

The resolution, however, was pressed and defeated. But there is still a possibility that the Government may grant the protection desired.

C. A. C. J.

## Notes from Great Britain.

### The Market.

LONDON, June 6, 1903.—There has been very little movement in the iron and steel trades this week, and what there has been is not very encouraging. There have been reports of further breaks in the price of iron in the United States, and as usual the speculative markets take an extreme view of such an event. Given that there has been a substantial decline in the price of American pig iron, it does not follow that we on this side are to be immediately flooded with foreign pig iron.

So far as Northern British markets are concerned, it is already known that the American demand came to an end some weeks ago, and prices accordingly fell from the level at which they had been held solely by that demand. Contracts have yet to be fulfilled, however, and as shipments are still reported to be very good, they must originally have been very substantial ones. When they come to an end possibly some further reductions may follow, but the caution at present being evinced seems rather excessive, and the movement unnecessarily erratic. It is difficult to see where reductions are to be made. Pig iron has lost the improvement experienced during the year. Stress of circumstances may bring down quotations further, but producers are already complaining of the narrow margin of profit owing to the dearth of coke.

Finished iron has experienced very little improvement in the matter of price. Any benefit manufacturers have experienced of late has been due to the steady inflow of orders, small, though they may have been, which have enabled them to keep their establishments running fairly regularly. It is reported that common nut iron has been sold at as low as £5 17s. 6d., but probably there were some exceptional circumstances which ought to be taken into consideration in connection with the price. Most makers quote £6 5s. for merchant bars and £6 10s. for special qualities. Steel makers also find an exceptionally poor demand, and the price is not above £7 5s. for ordinary galvanizing qualities. Galvanizers, however, report a better inquiry than a week or two ago, while dearer spelter has a tendency to make quotations firmer. In steel business is quieter. Prices this week are as follows:

**Pig Iron:** Scotch warrants, 52 shillings; Middlesbrough, 45 shillings 8 pence; Hematite (W. C.), 57 shillings 6 pence. Forge qualities: Staffordshire cinder, 49 shillings; part-mine, 50 to 51 shillings; all-mine, 60 shillings to 67 shillings 6 pence; best ditto, 80 to 85 shillings; cold blast, 95 to 100 shillings; Northamptonshire, 48 to 49 shillings; Derbyshire, 50 shillings 6 pence to 51 shillings 6 pence; North Staffordshire, 51 to 52 shillings; Lincolnshire, 51 shillings 1 penny.

| Public stores stocks, June 5:              | Tons.   |
|--|---------|
| Connell's, at Glasgow.....                 | 15,591  |
| Connell's, at Middlesbrough, hematite..... | 300     |
| Connell's, at Middlesbrough, June 4.....   | 141,987 |
| Hematite (West Coast).....                 | 21,277  |

**Finished Iron:** Marked bars, £8 10s.; Earl of Dudley's brand, £9 2s. 6d.; second grade, £7 10s.; common unmarked bars, £6 5s. to £6 10s.; North Staffordshire bars, £6 15s.; angles, £6 15s. to £7; sheets, singles, £7 2s. 6d. to £7 7s. 6d.; doubles, £7 5s. to £7 10s.; trebles, £7 17s. 6d. to £8 2s. 6d.; galvanized corrugated sheets, f.o.b. Liverpool, £11 5s. to £11 10s.; hoop iron, £6 17s. 6d. to £7 2s. 6d.; nail rod and rivet iron, £7 5s. to £7 10s.; gas strip, £6 12s. 6d. to £6 15s.

**Steel:** Bessemer billets, £4 15s. to £5; Siemens billets, £4 17s. 6d. to £5 2s. 6d.; mild steel bars, £6 12s. 6d. to £7 2s. 6d.; steel plates, £6 5s. to £7; steel girders, £6 to £6 5s.; steel angles, £5 15s. to £6 7s. 6d. At Middlesbrough: Heavy steel rails, £5 10s. In South Wales: Rails, £5 5s. to £6 10s.; tin plate bars, £4 15s. to £4 17s. 6d.; tin plate, Bessemer, 12s. 3d.; Siemens coke finish, 12s. 6d.

### Openings for Trade in Russia.

The following is extracted from an official report issued by the French Embassy at St. Petersburg and is written to apply more particularly to French manufacturers, but it will be found of value to American readers also. Although recognizing that American firms are supplying the apparatus and accessories necessary for the installation and working of blast furnaces, the writer of the report considers that there is still a good prospect of trade in these departments. Steam engines of from 10 to 10,000 horse-power are in demand for rolling mills, foundries, brick making, &c. As regards steam pumps, the American and German makes have proved successful

and a recommendation to manufacturers to follow such patterns is given.

A demand for railroad machinery, especially for the manufacture of small railroad materials, may be expected in Russia and Siberia, owing to the many railroad extensions which are now either under consideration or in actual building. It is expected that the demand for dynamos, arc and incandescent lamps, fittings and other electrical accessories will largely increase as soon as trade generally has recovered, and it is alleged that at present 80 per cent. of this business is in the hands of the Germans.

Low gas motors and low gas generators are wanted; in fact, owing to the cheapness of anthracite from the coal basins of Southern Russia, it has been found cheaper to run these motors than to use steam engines. Low gas motors have recently been employed for utilizing the gas from blast furnaces, and naphtha, petrol and benzine motors are also said to be worthy of attention. Business in textile machinery is alleged to be monopolized by German, Belgian and British manufacturers, but openings for further plant will probably be found in the new centers now being created in Perm, Orenburg, Kazan, Southern Russia and the Caucasus.

#### Russian Railroads.

It has been decided finally that the Black Sea Coast Railroad is to start at the station of Armavir, on the Vladikavkaz Railroad, and is to be carried over the Goskh Pass, on to Tuapse, approaching as nearly as possible the town of Malkop. From Tuapse the rails are to follow the Black Sea coast as far as Soukhoun, and from here the line, still continuing along the coast, is to extend as far as the station of Novo-Senaki, where it joins the Trans-Caucasian trunk line. It is expected that Soukhoun will play a very important part in commercial affairs in a few years' time. The work on the railroad will probably be pushed forward rapidly.

#### African Railway Developments.

I referred recently to the electrification of the Victoria Falls. Among new South African projects I now note one for the construction of a bridge over the Zambesi River at Victoria Falls, on the trunk route of the Cape to Cairo Railway. The Rhodesia Railways, Limited, have issued invitations to tender, and this is another case in which but a short time is allowed, as replies are to be in hand early in June. The bridge is to be immediately below the falls and its top will be about 400 feet above the river, while its center span will have a clear distance of 500 feet, owing to the great height and the rapids underneath. The bridge will consist of several thousand tons of steel. It is to admit of a double line of rails of the 3 foot 6 inch gauge, which obtains in South Africa, and arrangements must be made for a future roadway for ordinary vehicular and passenger traffic. The Cape to Cairo line has been completed to within 100 miles of the falls, and the remainder will probably be constructed before the end of this year.

A branch line from Karibib to Otavi in German South Africa has been long in contemplation. The mines in Otavi are also to have access to the Western sea coast. Port Alexander, in Portuguese Angola, has been decided upon as a starting point for the proposed railroad, which will be carried across the Kunene to Otavi, and possibly prolonged in the direction of Rhodesia.

#### Commission on Trade Disputes.

The promised Royal Commission on trade disputes and the law affecting trade combinations has at length been definitely appointed. Its scope, contrary to expectations, is almost entirely legal. The commissioners will be the Right Hon. A. Graham Murray (Lord Advocate for Scotland), chairman; Sir William Lewis, Bart., the well-known South Wales capitalist; Sir Godfrey Lushington, for some years Permanent Under-Secretary at the Home Office; Arthur Cohen, K.C., a counsel practicing in trade union cases, and formerly M.P. for Southwark, a working class London constituency, and Sidney Webb, who was selected with the approval of the labor M.P.'s, and who is a well-known writer on economic subjects. Hartley B. M. Mothersole, barrister, has been appointed secretary to the Commission.

#### Turbine Yacht for America.

The new steam yacht "Lorena," which has been built to the order of A. L. Barber of New York from the designs of Cox & King, London, by Ramage & Ferguson, Limited, Leith, and fitted with turbine engines by the Parsons Marine Steam Turbine Company, Limited, ran her official trial trip last week in Aberlady Bay, Firth of Forth. The mean speed of three double runs on the mile was found to be 17.904 knots. The length of the yacht over all is about 300 feet, with a water line length of 245 feet and a breadth of 33 feet. The displacement on trial was 1700 tons. Steam is supplied by four cylindrical tubular boilers, fitted with Howden's system of forced draft.

#### A New Canadian Steamer.

The steamer "Westmount," which has been built by C. S. Swan & Hunter, Limited, Wallsend, for the Montreal Transportation Company, was taken to sea recently for her trial trip. The principal dimensions of the vessel are: Length over all, 254 feet 6 inches; breadth, extreme, 42 feet; depth molded, 23 feet. She has been designed for trading on the Canadian lakes, and has been constructed to take the highest class of the British Corporation Registry. The machinery has been constructed by the North Eastern Marine Engineering Company, Wallsend, and consists of a set of triple expansion engines, 21, 35 and 58 inches in diameter, with 39-inch stroke, steam being supplied by two single ended boilers, 13 feet 9 inches in diameter by 10 feet 3 inches long, working at a pressure of 180 pounds per square inch. A mean speed of 11¼ knots was attained on the measured mile.

#### The German Shipping Companies.

Apparently the rapid development of German shipping companies has been followed by something like a pause. There are now in Bremen and Hamburg seven shipping companies, with a share capital amounting in each case to 10,000,000 marks or upward. At the beginning of 1897 these seven companies possessed a total share capital of 104,500,000 marks. Since that year they have been enlarged in a way which is without precedent in the annals of the German shipping trade. In 1897 new shares to the amount of 15,000,000 marks were issued; in 1898, 30,000,000 marks; in 1899, nearly 40,000,000 marks; in 1900, 25,000,000 marks; in 1901, 13,000,000 marks; in 1902, 30,000,000 marks, and in 1903, 5,000,000 marks. This means that in the course of seven years the increase of capital has been about 158,000,000 marks, without taking loans into account. Of the present total capital of the seven companies, 144,000,000 is invested at Hamburg and 120,000,000 marks at Bremen. The following table shows how the capital of each company has been increased during the seven years:

|   | 1897.<br>Marks. | 1903.<br>Marks. | Increase.<br>Marks. |
|---|-----------------|-----------------|---------------------|
| North German Lloyd.....                       | 40,000,000      | 100,000,000     | 60,000,000          |
| Hamburg-American Line....                     | 30,000,000      | 100,000,000     | 70,000,000          |
| Hansa Line.....                               | 10,000,000      | 20,000,000      | 10,000,000          |
| German Australian Steamship Company.....      | 4,000,000       | 12,000,000      | 8,000,000           |
| Hamburg South American Steamship Company..... | 7,500,000       | 11,250,000      | 3,750,000           |
| Kosmos Company.....                           | 8,000,000       | 11,000,000      | 3,000,000           |
| German East Africa Line..                     | 5,000,000       | 10,000,000      | 5,000,000           |

Within the next few years progress is likely to be slower, the tendency being in the direction of concentration.

S. G. H.

Edward H. Ward, a prominent business man of New Castle, Pa., was killed on June 4 in a collision of two Santa Fé trains near Stilwell, Kan., while on his way home from Arizona, where he went last fall for the benefit of his health. Mr. Ward was accompanied by his wife and daughter, who escaped unhurt. He was born in Hamilton, N. Y., and resided for many years in California, where he had large property interests. Subsequently he removed to New Castle, Pa., where he acted for some time as manager for the American Steel & Wire Company. Later he became sales agent for the Sharon Steel Company of Sharon, Pa., until the failure of his health compelled him to relinquish active business.

## PERSONAL.

William Burlingham has accepted an appointment as chief engine designer with the B. F. Sturtevant Company of Hyde Park, Mass., resigning a position in the United States Inspection Office with the Wm. R. Trigg Company of Richmond, Va. Mr. Burlingham has previously been associated with the Bath Iron Works, the General Electric Company, the Southwark Machine & Foundry Company and the Newport News Shipbuilding & Dry Dock Company. He has also served on T. A. Edison's staff at the East Orange laboratory, and is a graduate of the Worcester Polytechnic Institute.

G. L. Reis has been elected first vice-president of the Lackawanna Steel Company of Buffalo, N. Y., effective at once. Mr. Reis was recently appointed general superintendent of the South Works of the Illinois Steel Company, succeeding C. H. McCullough, Jr., who was elected second vice-president of the Illinois Steel Company. The resignation of Mr. Reis as superintendent of the south works has been accepted by President Buffington of the Illinois Steel Company to take effect July 1.

L. B. Ball, Detroit, Mich., has resigned as general manager of the Locke Steel Belt Company to accept a similar position with the Michigan Sprocket Chain Company, Limited, of Detroit.

J. R. Houston has resigned as secretary of the Laughlin Nail Company of Wheeling, W. Va., to associate himself with the firm of Howard M. Hooker & Co. of Pittsburgh.

H. H. Dickey, president of the Maryland Rail Company of Cumberland, Md., returned home last week from a trip to Europe.

John W. Gates has returned from Europe.

E. J. Buffington, president of the Illinois Steel Company, announces the appointment of W. A. Field as general superintendent of the south works of the Illinois Steel Company, to succeed G. L. Reis, resigned. The appointment takes effect July 1. Mr. Field has been connected with the Illinois Steel Company for a number of years in various capacities, of recent years being assistant superintendent.

Hugh B. Wick of Youngstown, Ohio, has accepted a responsible position with the Elyria Iron & Steel Company, at Elyria, Ohio, and will shortly remove from Youngstown to that place. Mr. Wick is a son of Henry Wick of Youngstown, and he and his father are large stockholders in the Elyria Iron & Steel Company.

Edward Darby, senior partner of the firm of Edward Darby & Son of Philadelphia, sails on the "Etruria" Saturday for a three months' trip to Europe. Mr. Darby although an octogenarian, is in perfect health, and looks forward to a most enjoyable visit.

At a meeting of the Board of Directors of the Chester Steel Castings Company of Chester, Pa., E. Watterman Dwight was elected president and treasurer of the company to succeed his father, Edmund C. Dwight, deceased.

James Gayley, first vice-president of the United States Steel Corporation, is on his way to the Lake Superior iron ore region.

C. A. Coffin, president of the General Electric Company, has returned from a trip abroad.

The Laughlin Nail Company, Wheeling, W. Va., state that it is not the purpose of the company to fill immediately the position of secretary vacated by J. R. Houston's resignation. F. T. Callahan, formerly of Syracuse, N. Y., is now in Wheeling, looking after the duties heretofore in charge of the secretary, and will likely be made secretary later on.

The members of the local committee having in charge the entertainment of the National Machine Tool Builders' Association's Convention at Worcester, have received many warm personal thanks for the manner in which everything went along last week. The committee consisted of J. W. Carrel of the Draper Machine Tool Company, Alonzo W. Whitcomb of the Whitcomb Mfg. Company and E. W. Whitmore of the Prentice Bros. Company.

## The Allis-Chalmers Company.

The annual report of the Allis-Chalmers Company for the year ended April 30 has been made public. It shows as follows:

|  | 1903.       | 1902.       | Increase. |
|--|-------------|-------------|-----------|
| Net profits after all expenses and provision for depreciation, maintenance and repairs ..... | \$1,653,576 | \$1,442,260 | \$211,316 |
| Preferred dividend .....   | 1,137,500   | 1,137,500   | .....     |
| Surplus .....  | \$516,076   | \$304,760   | \$211,516 |
| Previous surplus .....   | 304,760     | .....       | 304,760   |
| Total surplus .....  | \$820,836   | \$304,760   | \$516,076 |

The general balance sheet as of April 30 shows:

| Assets.  |              |              |             |
|--|--------------|--------------|-------------|
|  | 1903.        | 1902.        | Increase.   |
| Real estate, buildings, plants and good will ..... | \$29,199,493 | \$27,352,082 | \$1,847,411 |
| Bills and accounts receivable .....                | 2,475,578    | 2,778,721    | *303,143    |
| Merchandise, material, &c. ....                    | 5,131,800    | 3,333,665    | 1,798,135   |
| Cash .....   | 1,628,000    | 4,514,167    | *2,886,158  |
| Totals .....                                       | \$38,434,881 | \$37,978,635 | \$456,246   |
| Liabilities.                                       |              |              |             |
| Capital stock, preferred .....                     | \$16,250,000 | \$16,250,000 | .....       |
| Capital stock, common .....                        | 20,000,000   | 20,000,000   | .....       |
| Accounts payable .....                             | 1,079,671    | 1,139,500    | *\$59,829   |
| Dividend paid May 1 .....                          | 284,375      | 284,375      | .....       |
| Surplus .....                                      | 820,835      | 304,760      | 516,075     |
| Totals .....                                       | \$38,434,881 | \$37,978,635 | \$456,246   |

\* Decrease.

The report states that the surplus of \$561,076 earned for the year is equal to more than 2½ per cent. on the common stock. During the year, as well as in the previous year, the charges to capital have comprised only such expenditures as created additions to the plants for increased output, while during the same two years all other costs have been charged against the current revenues of the company. The company make their purchases upon a cash basis, discount bills and have no debts other than those incurred in the conduct of their current business.

There is cash in the banks amounting to \$1,628,409, and in addition, in excess of current liabilities there are net quick assets of \$6,243,333, making total cash and net cash assets of \$7,871,342. The net gain during the second fiscal year in net quick assets was \$391,325.

The orders unfinished and on hand April 30 amounted to \$8,797,483, as compared with \$8,157,034 last year. The outlook for work was, it is said, never better, and the business offered is greatly in excess of the present facilities, which will soon be ample to meet the demands.

## New York City Labor Notes.

The places of about 50 per cent. of the striking marine machinists in the metropolitan district have, up to this date, been filled with nonunion men. This is the result of co-operation between the New York Metal Trades Association and the National Metal Trades Association, and the operation of a labor department by the former organization. Philip Geler, Deputy Commissioner of the National Metal Trades Association, is in New York, working with Mr. Hunter, Commissioner of the New York Metal Trades Association, and is attending personally to the supplying of nonunion men to help out in the affected shops. The machinists formerly employed in 21 marine shops are out. All of these shops are, however, running with about half the usual quota of machinists. The employment department of the New York Metal Trades Association is operating very smoothly, and the success which has attended the efforts in this direction leads the employers to believe that the backbone of the strike is almost broken. The employers have offered to give an advance of 10 cents a day to all men getting from \$2.50 to \$2.80 per day, but this was rejected by the men. Since declining this offer many of the men have signified a willingness to return to work under the conditions offered, with the proviso that they receive the benefit of any further concessions granted by the employers. When their offer was declined the employers withdrew it, however, and in reply to the overtures of the strikers stated that they would have to return to work under the same conditions that existed prior to the strike.

## MANUFACTURING.

### Iron and Steel.

William Jessop of the Jessop Steel Works, Sheffield, England, who has just concluded a visit to Canada, announces that on his return he will recommend that his company establish a branch in that country.

Henry A. Hitler's Sons of Philadelphia, among the largest scrap iron dealers in the East, and who have recently erected one of the finest scrap iron places in the United States, have just purchased the two large furnaces at Crown Point, N. Y. In this purchase there are several thousand tons of scrap iron, several carloads of new brass tuyeres, locomotives, hoisting engines, two large blowing engines, several million new fire brick, a number of boilers in first-class condition, and, in fact, too much material to enumerate. They have also purchased the Fullerton rolling mill, at Fullerton, Pa. There may be some likelihood of running the latter plant later on.

The Lorain Steel Company of Johnstown, Pa., have elected the following directors: Elbert H. Gary, Daniel Coolidge, P. Lavelle, P. M. Boyd and E. B. Entwistle. The directors elected Daniel Coolidge president, P. Lavelle vice-president and P. M. Boyd secretary.

This week the Central Iron & Steel Company of Harrisburg, Pa., will put in operation their steel plate mills, which were burned a month ago. A temporary frame covering for the machinery has been built and hasty repairs to broken and ruined machines made. On Thursday, June 18, the directors of the company will meet and let the contract for a corrugated iron building, to replace the burned frame structure. The old building was worth \$100,000. The rapid work of repair at the Central mills has been commented upon by many iron men who have witnessed it.

The concrete foundations for the Semet-Solvay coke ovens at the Lebanon furnaces of the Pennsylvania Steel Company have been completed and work begun on the brick structure. There will be two batteries, aggregating 130 ovens, and the work will require a year for completion.

E. B. Leaf, Real Estate Trust Building, Philadelphia, has purchased the rolling mills at Elmira, N. Y., which were formerly operated by the Elmira Steel Company.

The report is officially denied that the Struthers Furnace Company, operating a blast furnace at Struthers, Ohio, would build a second stack. It is also denied that they will build a brick and tile works at Struthers. The blast furnace of the company, which has been out of blast for some time on account of repairing and relining, started up last week.

The new plant of the Columbia Steel Company, at Elyria, Ohio, is now in operation. Within a few days all of the 11 rolling mills will be running.

The Adams crucible steel plant, which has been erected at Redington, Pa., on the Lehigh Valley Railroad, near Freemansburg, will be put into operation July 1. The old machine shop of the Coleraine Iron Company will form a part of the plant.

### General Machinery.

The Sound Iron Works, Everett, Wash., will double the capacity of their plant by the construction of an additional story to present buildings and the installation of new machinery. The company manufacture mill, mining and marine machinery. C. F. Groenke is president and manager, Dave Pickett vice-president and N. D. Gaylord secretary.

The Powers Mfg. Company have been incorporated at Clarinda, Iowa, with a capital stock of \$50,000, of which \$30,000 is paid in, for the manufacture of well boring machines, wind mills and pumps. The officers of the company are: S. H. Powers, president and general manager; R. G. Powers, vice-president; Edwin Lisle, secretary; L. W. Lisle, treasurer, who, together with the following, constitute the first Board of Directors: W. T. Stockton, M. C. McVay, W. E. Biggs and C. A. Lisle. The company have secured a plot of ground 140 x 150 feet, affording excellent switching accommodations, and will shortly begin the construction thereon of a modern brick building, 70 x 150 feet.

The following are the officers and directors of the reorganized Erie Forge Company of Erie, Pa.: Robert F. Devine, president and treasurer; Joseph C. Campbell, secretary; T. F. Judge, sales manager; Geo. W. J. Stout, general manager; J. P. Harrington, formerly president of the Erie Forge Company, Limited; George B. Galey, Beaver, Pa.; Charles R. Eckert, attorney, Beaver, Pa.; A. C. Grove, Ellwood City, Pa. The company commenced business June 1.

The Scranton Steam Pump Company, Scranton, Pa., owing to rapidly increasing demands for their pumps, steam separators, shaking grate bars and furnace blowers, have been compelled to take their present modern foundry, which is 100 x 135 feet, for an erecting and additional machine shop, and have erected for foundry purposes a building 185 x 280 feet, having a central span of 40 feet. This building is completed and is now waiting a crane which has been ordered from the Whiting Foundry Equipment Company for delivery in August. The capacity of this foundry will be 15 tons per hour.

In the recent fire at the mills of the Central Iron & Steel Company, at Harrisburg, Pa., very little machinery was damaged beyond repair. Such new machinery as may be needed has been arranged for.

The Department of the Interior, Washington, D. C., will receive bids until June 22 for electric motors to operate elevator, presses and other machinery at the Geological Survey.

The Geisler Mfg. Company of Waynesboro, Pa., this week shipped two separators and two straw bruisers to Varna, Bulgaria, and will shortly send two portable engines to the same place. The sale was made through H. G. Nergararian & Co., Constantinople.

The charter of the York Electric Machine Company of York, Pa., has been granted, with a capital of \$10,000. The stockholders are Louis A. Drexler, Paul McJunkin, John E. Graybill, Jonas R. Trimmer, Horace S. Wiest, Isaac B. Auchey and Edward Simon.

The Hermance Machine Company, Williamsport, Pa., builders of wood working machinery, report extraordinary demand for their Hermance 1903 four-sided molder, which they build in four sizes, from 9 to 14 inches wide. They have a decided opinion that the improvements in it over any competing machine is the cause of its great sale. The company have bought considerable property adjacent to their works and are about putting up new buildings, which, when equipped, will treble their capacity.

The Putnam Machine Company of Fitchburg, Mass., are adding to their shops by roofing in the spaces between wings and by building a new power house. The main shop has eight wings, each 45 feet long, the space between being 35 feet wide. The wings have low pitch roof, and the wings of the monitor roof which covers the space between rest nearly on the ridge poles. The walls of the wing are taken out, throwing open the space. The high monitor has large windows covered with the new translucent fabric. The floors are of cement, laid deep. Three of the spaces between the wings are already roofed and the company are about to roof in two more spaces. Later on the other spaces will be utilized. Two 125 horse-power Dillon boilers have been installed and a new Westinghouse motor will be added, the purpose being to install motors in the shops for power. The size of the electrical units and the extent to which this manner of power transmission will be employed are not yet determined. The shops will also be electrically lighted. Apparatus for conveying coal from the cars to the boiler house will be put in to do away with hauling fuel, which is the method now employed.

A committee appointed by the directors of the American Seeding Machine Company of Springfield, Ohio, to investigate the Canadian field with a view to establishing an agricultural implement plant on the other side of the line, have reported very favorably on the proposition, and it is very probable they will at once erect a plant so as to be in shape for the spring trade. The most desirable city for the plant has not yet been settled upon. The company are planning improvements at their Springfield plant, and it is probable that a new machine shop will be erected.

The Cresson Foundry, Machine & Car Company, recently organized at Cresson, Pa., have elected the following officers: President, John W. Kephart, Ebensburg; vice-president, P. B. Cosgrove, Hastings; secretary and treasurer, R. Edgar Leabey, Ebensburg. The company have decided to increase their capital stock from \$5000 to \$100,000. They have taken over the plant of the Cresson Machine Company, which will be enlarged.

F. H. Bultman & Co. of Cleveland, manufacturers of automatic gear cutters, are shipping a machine capable of cutting 53-inch gears to the Northern Engineering Works of Detroit. This is the third large gear cutter they have built for this company.

Henry V. Hartz & Co. of Cleveland, manufacturers of special machinery, steel tackle blocks and other specialties, have broken ground for a large factory building on Second avenue, fronting on the Pennsylvania Railway tracks. The new plant will give them three times the capacity of the present factory on Champlain street.

A. D. Koch, Jonesboro, Ind., will erect a forge and machine plant at a cost of about \$10,000. It is the intention to manufacture and repair oil and gas well tools and conduct a general machine shop business.

The Canton Drop Forging & Mfg. Company of Canton, Ohio, have been incorporated, with \$25,000 capital stock, by James T. Anderson, James B. Welda, John Stein, Isaac H. Taylor and H. B. Stewart. They will erect a plant for the manufacture of drop forgings, tools and a number of steel products. A building site has been selected.

### Power Plant Equipment.

The Shepherd Engineering Company, manufacturers of the Shepherd steam engines, will, after July 1, have their general offices and works at Franklin, Pa., where they have secured for the manufacture of their product the large and modern plant constructed a few years ago by the Grant Tool Company. This plant will enable the company to take care of their greatly increased business, and will also enable them to make prompt deliveries on future work.

The Stroudsburg Engine Works, Stroudsburg, Pa., have shipped one of their hoisting engines, 5 x 8 inch cylinders, to the Mingle Machinery Exchange, Baltimore, Md., and another for the Chicago House Wrecking Company, Chicago, Ill., to a party at Chalfont, Ohio. They have 11 more engines, same size, in process of building, which are expected to be placed when completed. In addition they are making eight engines, 6½ x 10 inch cylinders, a size for which they are having numerous inquiries. All the engines of the company are fitted with the patent of L. Bartron, manager of the works, on applying and releasing the friction drum, which, is claimed, is more efficient than any other device.

An interesting example of the application of gas engines to central station service is afforded by the new plant of the Franklin Electric Company, Franklin, Pa. The gas power equipment will supplant a large steam plant which the company have in operation at the present time, and will supply current for electric light and power service throughout the city. The present equipment comprises five 125 horse-power Westinghouse vertical three cylinder gas engines, which will be belted to a corresponding number of 75-kw. alternating current generators. An interesting feature of the equipment is the provision made for the operation of the alternating current generators in parallel. This has proven to be a very difficult matter up to the present time in gas engine practice, and, it is stated, is made possible in the Westinghouse engines only by the employment of the principle of governing which is characteristic of this engine. The plant operates upon natural gas fuel.

The Laconia Electric Light Company, Laconia, N. H., will rebuild their power plant, which was recently burned. The plant will be operated by water power.

The steamship "Roseley," which recently left New York for various South African ports, took out what will probably be the first electric locomotive to enter the "Dark Continent." The locomotive, which was manufactured by the C. W. Hunt Company of West Brighton, S. I., is shipped to the order of the De Beers Consolidated Mines, Limited, the most powerful mining syndicate in South Africa, for use on one of their plants. The locomotive is of the latest battery storage type, standard throughout, with the exception of the gauge of the wheels, which is special, to suit the track now in use at the mines.

The Wm. Bailey & Sons Company, Milwaukee, announce that they have recently been awarded contracts for heating apparatus, as follows: The Doan School, Cleveland, Ohio, 8-foot fan with low pressure engine, heaters; also one 72-inch disk ventilating fan; Wm. McKinley and the Jas. E. Yeatman schools, St. Louis, Mo., four 11-foot fans, two 120-inch full housing fans, with two 12 x 16 horizontal center crank engines; leather drying and heating system for O. H. Oppenheimer Company, Newark, N. J., consisting of one 5½-foot three-quarter housing fan, with engine and heaters; dry kiln apparatus, Saginaw Bay Company, Cleveland, Ohio, consisting of one 70-inch full housing fan, with engine, heaters and roller bearing lumber trucks; American Spirits Mfg. Company, Peoria, Ill., 9-foot three-quarter housing fan, with engine, heaters and floor grates; dry kiln apparatus, Tomahawk Stave & Veneer Company, Tomahawk, Wis., consisting of 9-foot three-quarter housing fan, with engine, heaters, dry kiln trucks and transfer cars; Heller Bros. & Co., Youngstown, Ohio, 70-inch full housing fan, with engine and heaters, for drying lumber; eight apparatus for heating the warehouses in the Old Crow and Hermitage distilleries, for W. A. Gaines & Co., Frankfort, Ky., consisting of one 90-inch full housing fan, two 100-inch three-quarter housing fans, one 80-inch full housing fan, one 110-inch three-quarter housing fan, and three 120-inch three-quarter housing fans, all provided with engines and heaters; also the heating of the new Wilmington shops of the Philadelphia, Baltimore & Washington Railroad, consisting of three 12-foot, two 6-foot, one 90-inch, one 7-foot and two 5½-foot fans, with engines and heaters complete. The following orders for engines also are now on the books of the company: One vertical automatic inclosed ring oil bearing engine, to be connected to a 25-kw. Northern generator, for the Allis-Chalmers Company, Chicago; one engine of the same type, to be connected to a 15-kw. Milwaukee Electric Company's generator, for the Milwaukee Water Works; also three engines of the same type, to be connected to the Reliance Electric Company's 2½-kw. generators, for the irrigating fields in Texas; also two engines of the same type, to be connected to generators of the National Electric Company's make, built for Wm. Newman & Co., Ashland, Wis., for marine work; one of the same type, to be connected to a 17½ Triumph generator, for the Sherwin-Williams Company, Cleveland, Ohio. In addition to these for direct connection are following automatic engines: One 8 x 8 for Sherwin-Williams Company, Cleveland, Ohio; one 7 x 7 for the Under-Feed Stoker Company, Chicago; one 6 x 7 for the Tracy Engineering Company, San Francisco, Cal., and one 8 x 9 for Keelyn & Smith, Milwaukee, Wis. Orders for a number of exhausters and disk ventilating fans have also been received recently.

The Allis-Chalmers Company, Chicago and Milwaukee, report as a partial list of engine sales for the month of May the following: Northwestern Elevated Railway Company, Chicago, 34 and

70 x 60 inch heavy duty horizontal cross compound direct coupled Reynolds Corliss engine; Takata & Co., New York, 15 x 36 inch heavy duty horizontal direct coupled Reynolds Corliss engine; Tintie Mining & Developing Company, Salt Lake City, Utah, 12 x 30 inch heavy duty Reynolds Corliss engine; Geo. M. Moulton & Co., Chicago, Reynolds heater; Madison Cotton Oil Company, Vicksburg, Miss., 18 x 42 inch heavy duty Reynolds Corliss engine; Munising Paper Company, Munising, Mich., two 20 and 40 x 42 inch heavy duty cross compound direct coupled Reynolds Corliss engines; Illinois Steel Company, Chicago, two 24 and 48 x 60 inch duplex combined vertical and horizontal direct coupled Reynolds Corliss engines; Chas. B. Pride, Appleton, Wis., two 14 x 36 inch heavy duty Reynolds Corliss engines; one 16 x 36 inch heavy duty Reynolds Corliss engine, and 14 and 28 x 36 inch tandem compound Reynolds Corliss engine; Cananea Consolidated Copper Company, New York, 16 and 30 x 36 inch tandem compound heavy duty Reynolds Corliss engine; Gluck Mills, Anderson, S. C., 18 and 38 x 48 inch heavy duty cross compound Reynolds Corliss engine; Martin-Barriss Company, Cleveland, Ohio, 20 x 42 inch heavy duty Reynolds Corliss engine; St. Louis Exposition, St. Louis, Mo., 44 and 60 x 94 inch combined vertical and horizontal direct coupled Reynolds Corliss engine; National Tube Company, Pittsburgh, Pa., three vertical triple expansion pumping engines, 15,000,000 gallons capacity each; Calumet & Arizona Mining Company, Arizona, 12 x 15 inch geared hoisting engine; Board of Public Works, Kansas City, Mo., duplex double acting Kiedler pump, 18½ x 42 inch stroke, with a four-cylinder triple expansion Corliss engine, 24, 42 and two 50 inches diameter, by 42 inch stroke, with auxiliary machinery, consisting of two special suction surface condensers, condenser piping and air pumps, air pump piping and separated drain pumps; one 12 x 30, 20 x 42, 22 x 48 and two 16 x 36 inch girder frame Reynolds Corliss engines.

C. H. Brown & Co., engine builders, Fitchburg, Mass., have a large number of orders on hand, including 500 horse-power cross compound, Crocker, Burbank & Co. of Fitchburg; 500 horse-power cross compound, Reed & Prince Mfg. Company, Worcester, 400 horse-power, Dungan Hood & Co., Philadelphia; 250 horse-power, George G. Page Box Company, Cambridge, Mass.; 500 horse-power cross compound, Grant Yarn Company, Fitchburg; 80 horse-power, C. L. Russell, West Swansey, N. H.; 100 horse-power, Lakeville Woolen Company, West Rutland, Mass.; 150 horse-power, Carr Leather Company, Salem, Mass.; 150 horse-power, Compensating Pipe Organ Company, Battle Creek, Mich.; Lowell Electric Light Company, Lowell, Mass., 750 horse-power cross compound; Peck, Stow & Wilcox Company of Southington, Conn., 300 horse-power engine.

The Larimore Rotary Engine Company, Modesto, Ill., have been incorporated with a capital stock of \$10,000, to manufacture all sizes and kinds of rotary engines. New buildings will be constructed, including a foundry, but plans have not been completed. The incorporators are J. W. Larimore, W. K. Mertz and T. B. Wright.

The Norton Coal Company of Norton, Va., are opening new operations and adding coke ovens, for which extensions to their plant they have recently purchased from the Westinghouse Electric & Mfg. Company two additional generators with larry equipment, &c. This company already have in use two kilowatt, belted, 250-volt Westinghouse generators, together with two Baldwin-Westinghouse mining locomotives, switchboard and other auxiliary apparatus, making a complete electrical installation for mine haulage purposes.

The Bessemer Gas Engine Company, Incorporated, Grove City, Pa., are building an addition to their present foundry 100 x 110 feet, and building new core ovens, putting in new elevator, &c. They are also adding a steel structural building, 53 x 275 feet, to their erecting and testing department. In this building they will place a 30-ton electric crane with 50 feet span, and will also install one of the same size in the foundry. These cranes are being furnished by the Cleveland Car & Crane Company of Wycliffe, Ohio. They already have two of this company's cranes in use. They are also erecting a building at Marion, Ind., 70 x 106 feet, for general machine shop and warehouse. This building will also be fitted up with an electric crane and the very latest and best machinery, all of which is now contracted for. The company voluntarily gave their men a nine-hour day with ten hours' pay on June 1.

The Harrisburg Foundry & Machine Works, Harrisburg, Pa., have recently sold Mrs. Andrew Carnegie a 175 horse-power standard engine for her estate at Don Jeanness, Fla; William Clifford, Pittsburgh, 800 horse-power engine; Biloxi Electric Light & Power Company, Biloxi, Miss., 400 horse-power engine, and the Pittsburgh Coal Company, Pittsburgh, a good sized engine.

The Coatesville Boiler Works, with New York offices at 141 Broadway, announce the completion of their new shops, at Coatesville, Pa., which will give them three times the capacity of the old ones. The shops are strictly modern in every particular. The product is high duty boilers and plate metal construction.

The Ohio Brass Works of Mansfield, Ohio, have placed a contract for the erection of a boiler house and for the necessary equipment. The building will be 40 x 70 feet.

Orlando Hamilton has sold his interest in the Pease Engine & Machine Works, Goshen, Ind., to Christian Soens of South Bend. Mr. Soens will not remove to Goshen, the full management of the plant being under the direction of Henry W. Pease. The company are seeking new quarters, and as soon as a desirable location can be found it is the intention to increase the size and capacity of the plant.

It is stated that the village of Grantsburg, Wis., will receive bids until June 23 for an electric light plant, consisting of 60 horse-power engine, 35-kw. generator, boiler, wire, &c. Oscar Clausen, St. Paul, Minn., is consulting engineer.

The Vincent Valve Company of Sandusky, Ohio, manufacturers of metal valves, have been placed in the hands of Perry G. Walker as receiver. The action was taken on the application for foreclosure made by the Third National Exchange Bank of Sandusky, who held a mortgage of \$20,000, covering the plant, real estate and personal property of the company. In the petition it was alleged that the company owed about \$100,000 which they were unable to pay, and this was admitted. There will be no shut down, and it is probable that a reorganization will be effected.

The Smith Boiler Works of Port Huron, Mich., have notified the Chamber of Commerce of Toledo, Ohio, that they are planning to remove to that city. They are seeking a site, and if a vacant factory cannot be secured they will erect a new building. The object in moving to Toledo is because it is a better distributing point and more centrally located with reference to the iron and steel trade and the consumers of iron products.

The Springfield, Troy & Piqua Traction Company of Springfield, Ohio, have completed preliminary plans for the erection at Springfield of a large alternating current system power house. The engine room will be 46 x 82 feet and the boiler room 52 x 122 feet. The latter will contain eight 400 horse-power Babcock & Wilcox boilers, and the engine room will be equipped with two 2000-kw. General Electric turbine generator sets. Among other equipment there will be overhead coal bunkers, automatic ash conveyors and electrically driven cranes. D. H. Ullery is chief electrician for the company and will supervise the erection of the plant.

#### Foundries.

After a month's idleness the locked out molders of the Penn Steel Casting Company, Chester, Pa., have returned to work on the company's terms.

The business of Lannon Brothers, founders, Pueblo, Col., has been incorporated, with a capital stock of \$150,000 as the Pueblo Foundry & Machine Company.

Wolfe & Englert, the Composite Metal Company, Catsauqua, Pa., have broken ground for the erection of a new plant. A brick and steel foundry building, 60 x 150 feet, and other buildings are to be erected. The melting equipment is to consist of ten crucible furnaces, an 8-ton reverberatory and a 15-ton open hearth furnace, an oil furnace and a cupola. Electric cranes and other modern foundry equipment will also be installed. General gray iron castings, as well as the manufacture of brass, bronze and other composite metals, will be the product of the new plant.

The Pennsylvania Railroad Company are doubling the capacity of their brass foundries at Altoona, Pa. The foundries will furnish all the brass fittings used by the company on their lines east of Pittsburgh, and a portion for the lines west. They are now turning out from 25 to 30 tons of brass daily. The company will also rebuild and remodel their malleable iron and wheel foundries, at Altoona, and have purchased a large site on which to erect the new plant. Owing to inadequate facilities the company have been buying wheels, but with the new plant in operation they will make all the wheels used in their shops.

On account of very heavy business the Susquehanna Casting Company, the Wrightsville Hardware Company and Disinger Bros., manufacturers of gasoline engines, all of Wrightsville, Pa., will work through the warm months without a lay off.

The Bethlehem Steel Company's new 103-foot car made its second trip to Pittsburgh last week, carrying a forge press weighing 110 tons for the Carnegie plant, at Homestead, Pa. Seven more castings almost as large will follow.

The Central Brass Foundry Company of Cleveland have broken ground for an addition to their plant. They manufacture plumbers' supplies and brass goods.

The Ohio Foundry Company, Dayton, Ohio, whose plant was recently destroyed by fire, have leased the Stoddard Mfg. Company's foundry, at Walnut and State streets, where they will have sufficient capacity to take care of their business. The company are not in the market for any equipment, as the machinery was not damaged beyond repair.

The Duplex Foundry Company of Cleveland have commenced operation in their newly completed plant, at Elyria, Ohio. They will manufacture catch basins and plumbers' supplies. The first cast was made by Mayor Folger of Elyria, who was a molder 40 years ago.

The Toledo Co-operative Foundry Company of Toledo, Ohio, have been incorporated with \$25,000 capital stock. F. E. Reynolds, B. Fred. Tichnor, William T. Henry, Edward R. Caulkins, Jacob J. Sperry, P. McNaughton, Fred. A. Warren,

B. A. White, F. J. Murray and others are interested. The stockholders are all union molders. The company will locate a plant on the Toledo Terminal & Belt Railway.

#### The United States Shipbuilding Company.

The situation with regard to the United States Shipbuilding Company is decidedly complicated. Some of the holders of the 5 per cent. bonds of the company are displeased with the plans proposed by the Reorganization Committee and have made application to the New Jersey courts for the appointment of a receiver in the expectation that they may be able to secure an arrangement by which their interests will be better protected. In the meantime the Reorganization Committee announce that they propose to continue their efforts without regard to the application for a receivership.

A dispute has arisen between Charles M. Schwab, representing himself and J. P. Morgan & Co., and Samuel Untermyer, chief counsel of the protesting bondholders, with regard to the property of the Bethlehem Steel Company. An attack was made on the method through which the property of the Bethlehem Steel Company was transferred to the United States Shipbuilding Company, and Mr. Schwab made the proposition that if the company would transfer the property of the Bethlehem Steel Company to him he would return all the securities which had been given him and J. P. Morgan & Co. as a consideration for the purchase. To this Mr. Untermyer has replied that Mr. Schwab's offer will be put in the hands of the Bondholders' Protective Committee when formed and that the receiver, if appointed, will be urged to present the offer for favorable consideration to the court in New Jersey. But Mr. Untermyer says that it is possible that the receiver may be unwilling to release the claim of stock liability against Mr. Schwab on the \$20,000,000 of stock which is charged to have been issued to him without consideration if he insists on such a release as a condition of taking back the Bethlehem property. He insists that Mr. Schwab shall repay to the shipbuilding company the moneys withdrawn from them for working capital and "so-called betterments of the Bethlehem plant;" second, that he account for any excessive profits of the steel plant which were made at the expense of the shipbuilding company; third, that there shall be a full accounting of the transactions between the two companies, to the end that both companies be restored to the same position they occupied before the purchase; fourth, that proper provision be made for the completion of the work now under way and undertaken under existing contracts by the Bethlehem Company for the shipbuilding company at reasonable prices. He adds, "As the Bethlehem Company have contributed nothing to the resources of the shipbuilding company, and have, on the contrary, drawn largely on the resources of the latter for their support, notwithstanding their brave showing of paper profits, I trust you will appreciate the justice of these conditions." A large proportion of the bondholders, according to the statement of members of the Reorganization Committee, are decidedly opposed to surrendering the steel plant and will resist such a step with vigor.

The New York *Evening Post* states that the dispute between Mr. Schwab and the other creditors of the United States Shipbuilding Company has aroused an interesting query relative to the future of some of the recent mergers. The Bethlehem Steel Company were taken in through the medium of a collateral trust, as were scores of other properties in recent railroad mergers. "In the case of the Bethlehem's collateral lien on the United States Shipbuilding Company, three distinct propositions are now before the community. Mr. Schwab's lawyers and the Reorganization Committee urge that the old collateral bonds be now exchanged for a new first mortgage, superseding and, in fact, displacing all other creditors of the company. Counsel for the objecting bondholding interests invite Mr. Schwab to scale down the principal of his collateral mortgage 35 per cent., the other bondholders to do the same. Mr. Schwab himself offers to give up his mortgage lien if the collateral behind it is returned to him. Nobody knows which expedient will be adopted or what its result will be, but a highly interesting light is thrown on the future complexities of the collateral trust."

## The Iron and Metal Trades.

All the departments of the Iron and Steel trade are rather quiet, and there is a growing disposition among buyers to act conservatively. The unsettled condition of labor contributes largely to this, but it is not quite clear that the requirements of the country have undergone an actual shrinkage. The consuming interests of the West, in particular, are, according to all accounts, as busy as ever and face the future with confidence. The feeling seems to be that Eastern sentiment is unduly influenced by the course of events in Wall Street and by the attitude of the financial community.

The Pig Iron markets are weaker, this applying more particularly to Foundry grades. There has been a greater volume of business, but it is almost entirely in small lots for early delivery, thus showing that buyers have not yet begun to cover their requirements for the third and fourth quarters. It is worthy of note, however, that in a few isolated instances contracts for round lots for delivery during the second half have been made.

Undue significance has been attached to some forced sales of moderate lots of foreign Pig Iron. They were part of cargoes which arrived late, owing to accidents to the steamers. Since the importers lost money on them the sales do not indicate that foreign iron can compete at the present level.

The plain fact, however, is that the present level of prices, even with the concessions made by some of the makers, does not tempt consumers, and there seems only one outcome—a further yielding on the part of the furnaces. As yet there are no indications that the weaker stacks must blow out. It is admitted that they cannot come out whole now, even though costs have declined through lower offerings of Coke, which has sold lately on the basis of \$2.75 at oven for standard Connellsville.

Narrow as the Steel market is, it has displayed some weakness lately, and some of the larger interests have shown some eagerness to secure business even moderate in quantity. Some concessions are being quietly made.

Reports of large sales of Steel Rails for 1904 delivery have been current, but have been denied. They could not well have been definitely made prior to the meeting of the manufacturers, which is to take place at the close of this week. It is not regarded as probable that there will be any change in the price. An advance seems out of the question. It is understood that some very large orders will be placed as soon as the official announcement is made. There is still some business cropping up for early delivery East and West, and there is also in the market an order for 20,000 tons for the Canadian Northwest, on which our mills must figure against European competition.

In some lines of manufactured Iron and Steel there is an unsatisfactory volume of business and some shading of prices is going on. The lowering in the prices of raw materials, Pig Iron, Billets and Old Material, puts outside mills into the position where they can make concessions under stress.

The expected lowering in the price of Pig Lead has come. There has been a reduction of  $\frac{1}{4}$ c. per lb. to  $4\frac{1}{8}$ c., which is effective to-day.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

June 18, 1903, June 11, 1903, May 20, 1903, June 18, 1902.

### PIG IRON:

|   |         |         |         |         |
|---|---------|---------|---------|---------|
| Foundry Pig No. 2, Standard, Philadelphia ..... | \$18.75 | \$19.25 | \$19.50 | \$21.50 |
| Foundry Pig No. 2, Southern, Cincinnati .....   | 17.75   | 17.75   | 18.75   | 20.50   |
| Foundry Pig No. 2, Local, Chicago .....         | 19.50   | 19.50   | 20.00   | 21.50   |
| Bessemer Pig, Pittsburgh .....                  | 19.85   | 19.85   | 20.10   | 21.50   |
| Gray Forge, Pittsburgh .....                    | 18.75   | 19.25   | 19.75   | 20.00   |
| Lake Superior Charcoal, Chicago .....           | 24.00   | 24.00   | 24.00   | 24.00   |

### BILLETS, RAILS, ETC.:

|  |       |        |        |       |
|--|-------|--------|--------|-------|
| Steel Billets, Pittsburgh .....        | 29.00 | 29.00  | 30.50  | 32.50 |
| Steel Billets, Philadelphia .....      | 30.00 | 27.50* | 28.00* | 30.00 |
| Steel Billets, Chicago .....           | 30.00 | 30.50  | 32.50  | ....  |
| Wire Rods, Pittsburgh .....            | 36.50 | 37.00  | 37.00  | 37.00 |
| Steel Rails, Heavy, Eastern Mill ..... | 28.00 | 28.00  | 28.00  | 28.00 |

### OLD MATERIAL:

|                                     |       |       |       |       |
|-------------------------------------|-------|-------|-------|-------|
| O. Steel Rails, Chicago .....       | 17.00 | 17.00 | 17.00 | 18.50 |
| O. Steel Rails, Philadelphia .....  | 21.00 | 21.00 | 21.50 | 21.25 |
| O. Iron Rails, Chicago .....        | 20.00 | 21.50 | 23.50 | 24.00 |
| O. Iron Rails, Philadelphia .....   | 23.00 | 24.00 | 24.50 | 24.50 |
| O. Car Wheels, Chicago .....        | 21.50 | 22.00 | 22.50 | 20.50 |
| O. Car Wheels, Philadelphia .....   | 21.50 | 22.00 | 24.00 | 20.00 |
| Heavy Steel Scrap, Pittsburgh ..... | ....  | ....  | 21.00 | ....  |
| Heavy Steel Scrap, Chicago .....    | 16.50 | 16.50 | 17.00 | 19.00 |

### FINISHED IRON AND STEEL:

|                                       |       |       |       |      |
|---------------------------------------|-------|-------|-------|------|
| Refined Iron Bars, Philadelphia ..... | 1.75  | 1.80  | 1.80  | 1.95 |
| Common Iron Bars, Chicago .....       | 1.70  | 1.75  | 1.75  | 1.75 |
| Common Iron Bars, Pittsburgh .....    | 1.75  | ....  | 1.80  | 1.80 |
| Steel Bars, Tidewater .....           | 1.75  | 1.75  | 1.75  | 1.95 |
| Steel Bars, Pittsburgh .....          | 1.60  | 1.60  | 1.60  | 1.60 |
| Tank Plates, Tidewater .....          | 1.78  | 1.78  | 1.80  | 2.00 |
| Tank Plates, Pittsburgh .....         | 1.60  | 1.60  | 1.60  | 1.80 |
| Beams, Tidewater .....                | 1.73½ | 1.73½ | 1.73½ | 2.10 |
| Beams, Pittsburgh .....               | 1.60  | 1.60  | 1.60  | 1.60 |
| Angles, Tidewater .....               | 1.73½ | 1.73½ | 1.73½ | 2.00 |
| Angles, Pittsburgh .....              | 1.60  | 1.60  | 1.60  | 1.60 |
| Skelp, Grooved Iron, Pittsburgh ..... | 1.90  | 1.90  | 2.00  | 2.15 |
| Skelp, Sheared Iron, Pittsburgh ..... | 2.00  | 2.00  | 2.10  | 2.35 |
| Sheets, No. 27, Pittsburgh .....      | 2.65  | 2.65  | 2.65  | 2.90 |
| Barb Wire, f.o.b. Pittsburgh .....    | 2.60  | 2.60  | 2.60  | 2.90 |
| Wire Nails, f.o.b. Pittsburgh .....   | 2.00  | 2.00  | 2.00  | 2.05 |
| Cut Nails, f.o.b. Pittsburgh .....    | 2.15  | 2.15  | 2.15  | 2.05 |

### METALS:

|   |       |       |       |       |
|---|-------|-------|-------|-------|
| Copper, New York .....                                    | 14.50 | 14.50 | 14.75 | 12.25 |
| Spelter, St. Louis .....                                  | 5.55  | 5.60  | 5.45  | 4.75  |
| Lead, New York .....                                      | 4.12½ | 4.37½ | 4.37½ | 4.10  |
| Lead, St. Louis .....                                     | 3.90  | 4.15  | 4.15  | 3.97½ |
| Tin, New York .....                                       | 28.60 | 28.00 | 29.45 | 28.75 |
| Antimony, Hallett, New York .....                         | 7.00  | 7.00  | 7.00  | 8.00  |
| Nickel, New York .....                                    | 40.00 | 40.00 | 40.00 | 50.00 |
| Tin Plate, Domestic, Bessemer, 100 pounds, New York ..... | 3.99  | 3.99  | 3.99  | 4.19  |

\* Foreign.

## Chicago.

FISHER BUILDING, June 17, 1903.—(By Telegraph.)

While symptoms of congestion in some lines of Finished Steel are still prominent and the buoyancy and animation which characterized the market during the winter are still absent, the outlook is by no means discouraging. The deadlock between buyers and sellers of Pig Iron continues and scarcely a new feature has developed during the week worthy of note. Bar Iron has developed further weakness, and with Old Material again lower, mills have been more willing to allow concessions, but the business offered is light. Some little improvement is noted in the market for Steel Bars, and specifications on old commitments have increased materially. Further weakness is noted in Billets and Sheet Bars, but this is not reflected in the market for Finished Material, as prices for the latter are based on much lower prices than are now prevailing for raw and intermediate products. A feature of interest is that there being a disposition among consumers to buy only for immediate wants, the warehouseman is reaping a benefit at the expense of the mills, and stocks in second hands are heavy. Structural Material has been especially dull and Plates and Sheets have been less active for mill shipments. There has been a better demand for Agricultural Spring Steel, several contracts of moment having been placed during the week for the season's requirements. Rails have continued in good demand and strong. Old Iron and Old Steel of nearly every description have suffered a further decline of 50c. to \$1.50 per ton. Coke for immediate shipment has continued heavy and weak, but contracts for the last half of the year are held a little more firmly.

**Pig Iron.**—Inquiries for Pig Iron during the week have been numerous and for a large aggregate tonnage, but nego-

tations thus far have not led to the placing of contracts for appreciable amounts. The demand is for all grades of Foundry, Bessemer and Basic Iron. Buyers still insist upon material concessions from present asking prices, but thus far producers have shown no disposition to shade the recently established price for Southern Iron and the parity for Northern brands. However, there seems to be a general feeling that a firm offer for considerable quantities would result in the closing of considerable business. As near as can be determined, large buyers would contract for the last half of the year in the neighborhood of \$14 for No. 2 Foundry, although they continue to create the impression that they expect to purchase in the neighborhood of \$12. The fact that many furnaces would blow out should prices decline another \$1 a ton seems to be generally admitted. But if melting continues at the rate of the past few months all the Iron now being produced will be needed, and the indications in this section are that there is enough Foundry business secured and in sight for a continued heavy melt during the last two quarters of the year. Business during the week has been confined to small lots ranging from carloads to 100 to 200 tons, a 500-ton transaction being rare. Most of the transactions have been on the basis of quotations and for quick delivery. While it is rumored that the \$15 price for No. 2 Foundry has been shaded from 15c. to 25c., it cannot be verified. The fact is that No. 2 Foundry for quick delivery is scarce, but there is a surplus of Soft grades upon which concessions have been made, No. 1 selling at \$15.25 and No. 2 at \$14.75 to \$15, Birmingham basis. Silvery Iron, both North and South, has been more freely offered and is easier, a decline of \$1 a ton being noted in Jackson County and Kentucky Silvery. Bessemer Iron, both Standard and Malleable, has also been easier in tone, but prices have not changed from a week ago. The following are the prices current, trading being mainly at inside figures:

|  |                    |
|--|--------------------|
| Lake Superior Charcoal.....  | \$24.00 to \$25.00 |
| Local Coke Foundry, No. 1.....                                     | 20.50 to 21.00     |
| Local Coke Foundry, No. 2.....                                     | 19.50 to 20.00     |
| Local Coke Foundry, No. 3.....                                     | 19.00 to 19.50     |
| Local Scotch, No. 1.....   | 21.50 to 22.00     |
| Ohio Strong Softeners, No. 1.....                                  | 21.00 to 21.50     |
| Ohio Strong Softeners, No. 2.....                                  | 20.50 to 21.00     |
| Southern Silvery, according to Silicon.....                        | 20.60 to 21.50     |
| Southern Coke, No. 1.....  | 19.85 to 20.35     |
| Southern Coke, No. 2.....  | 19.35 to 19.85     |
| Southern Coke, No. 3.....  | 18.85 to 19.35     |
| Southern Coke, No. 1 Soft.....                                     | 19.85 to 20.30     |
| Southern Coke, No. 2 Soft.....                                     | 19.35 to 19.85     |
| Foundry Forge.....   | 18.85 to 19.35     |
| Southern Gray Forge.....   | 18.35 to 18.85     |
| Southern Mottled.....  | 18.10 to 18.35     |
| Southern Charcoal Softeners, according to Silicon.....             | 23.85 to 24.85     |
| Alabama and Georgia Car Wheel.....                                 | 27.85 to 28.85     |
| Malleable Bessemer.....  | 19.50 to 20.00     |
| Standard Bessemer.....   | 20.00 to 20.50     |
| Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon..... | 24.30 to 25.30     |

**Bars.**—Business in Steel Bars, while light, has shown some improvement, a number of contracts of from 250 to 500 tons having been placed. No change is expected to be made in the established market price, and it is hence decidedly to the advantage of consumers to specify on contracts not yet filled, and, indeed, specifications during the week have improved materially. Bar Iron, on the other hand, has continued slow and easy, and with a further decline in the price of Scrap lower prices have been made for Bars in some instances. While the bulk of the trading has been on the basis of 1.75c., Chicago, there have been sales at 1.72½c., and one mill at least has announced its willingness to accept business on the basis of 1.70c. The business offering is light, only a few 100-ton lots having been closed. The following are the prices current, f.o.b. cars, Chicago, mill shipment: Bar Iron, 1.70c. to 1.80c.; Soft Steel Bars, 1.76½c. to 1.86½c.; Hoops, 2.16½c. to 2.26½c.; Angles, under 3 inches, 1.86½c. to 1.91½c., base. The merchant trade has been without special activity, but the market has been steady at the revision announced a week ago. The following are the prices current: Bar Iron, 2c. to 2.15c.; Soft Steel Bars, 2c. rates; Angles, 3 inches and under, 2.10c. rates, and Hoops, 2.40c., base, from store.

**Structural Material.**—The volume of business has been very light, and the prospect for improvement in the near future is not bright. Shipments are being made promptly from mills as a rule, but local stocks are heavy. Prices, however, remain steady, as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 2c. to 2.25c. Shipments of small lots from local stocks in the aggregate have been light, but one large dealer reports improvement in this respect. The market, however, remains steady, as follows: Beams and Channels, 2¼c. to 2½c.; Angles, 2.25c. to 2.50c.; Tees, 2.30c. to 2.55c., at local yards.

**Plates.**—Sales during the week have been confined to small lots, the sale of a 5000-ton lot to a local jobber having been included in the 9000 tons reported sold a week ago. The market has continued steady at the following prices, f.o.b. cars, Chicago, mill shipment: Tank Steel, ¼-inch and heavier, 1.75c. to 2c.; Flange, 1.85c. to 2.15c.; Marine, 1.95c.

to 2.10c. Some little improvement is reported in shipments from local stocks, which are heavy, but prices have remained steady, as previously reported: Steel, ¼-inch and heavier, 2.15c. to 2.20c.; Tank Steel, 3-16-inch, 2.25c. to 2.30c.; No. 8, 2.30c. to 2.40c.; Flange Steel, 2.40c. to 2.50c., all f.o.b. warehouse, Chicago.

**Sheets.**—While there has been a fair inquiry for mill shipment for Black and Galvanized Sheets, it has resulted in little business; but there is no disposition to shade prices, although there is some irregularity in quotations made, especially by independent mills. The following are the prices current for Black Sheets, carload lots, Chicago, mill shipment: No. 10, 2.12½c. to 2.16½c.; No. 12, 2.22½c. to 2.26½c.; No. 14, 2.32½c. to 2.36½c.; No. 16, 2.42½c. to 2.46½c.; Nos. 18 and 20, 2.56½c. to 2.60½c.; Nos. 22 and 24, 2.66½c. to 2.70½c.; No. 26, 2.76½c. to 2.80½c.; No. 27, 2.86½c. to 2.90½c.; No. 28, 2.96½c. to 3.00½c. Galvanized Sheets have been in fair demand for mill shipment and the market has remained steady at 75 and 10 discount, Pittsburgh, and 75 and 5, Chicago, for mill shipment, but there have been exceptional transactions at a shade better for the consumer. There has been some little increase in sales from local stocks for both Black and Galvanized Sheets, the latter selling on the basis of 75 and 2½ to 75 discount.

**Cast Pipe.**—The only contract of moment taken during the week has been for 2200 tons of 4's to 16's, for delivery at Sioux City, Iowa. Among the other sales worthy of mention are 500 tons of 10's for shipment to a point in Minnesota, and 400 tons of 4's to 12's for shipment to Marion, Ind. The letting at Erie, Pa., which was for 1200 tons, will take place on the 27th inst. The current order trade from water, gas and railroad companies has been light. Prices have been without change, manufacturers continuing to meet the current order demand for small lots, f.o.b. cars, Chicago, as follows: 4-inch, \$33; 6-inch, \$32; 8-inch, \$31.50, and larger, \$31 for Water, and \$1 per ton higher for Gas Pipe.

**Billets.**—The local market is weaker, in sympathy with other domestic points, where offerings are larger, and advances of lower prices abroad. Domestic Re-rolling Bessemer Billets are quotable at \$30 to \$30.50, Chicago, and sales of 5000 tons of Open Hearth were made at \$30.50 at an Ohio mill, for delivery beginning at once and extending forward several months. There is a fair demand for single car lots of Open Hearth Forging Billets, which is met at \$33 to \$38, according to analysis, buyer and time of delivery. For small lots from \$1 to \$2 per ton over these prices is asked.

**Merchant Pipe.**—The prominent features of the market are unchanged. The demand has continued quite active, and the aggregate tonnage has been fully equal to the average, and prices have been well sustained. Independent mills are well sold ahead and combination mills are making fairly quick shipments of liberal orders. The market remains steady at the following schedule of discount for carload lots, Chicago, base, random lengths, mill shipment:

|                     | Steel Pipe. |           | Guaranteed Wrought Iron. |           |
|---------------------|-------------|-----------|--------------------------|-----------|
|                     | Black.      | Galvd.    | Black.                   | Galvd.    |
|                     | Per cent.   | Per cent. | Per cent.                | Per cent. |
| ½ to ¾ inch.....    | 66.35       | 56.35     | 63.35                    | 53.35     |
| ¾ inch.....         | 68.35       | 58.35     | 65.35                    | 55.35     |
| ¾ to 6 inches.....  | 73.35       | 63.35     | 70.35                    | 60.35     |
| 7 to 12 inches..... | 67.35       | 57.35     | 64.35                    | 54.35     |

Less than carloads, 12½ per cent. advance.

**Boiler Tubes.**—The market remains steady, jobbers placing a fair tonnage with mills. The following is the schedule of discounts:

|                          | Steel. | Iron. |
|--------------------------|--------|-------|
| 1 to 1¼ inches.....      | 43.35  | 38.35 |
| 1¼ to 2¼ inches.....     | 55.85  | 35.85 |
| 2¼ to 5 inches.....      | 60.85  | 45.85 |
| 6 inches and larger..... | 55.85  | 35.85 |

Less than carloads, 12½ per cent. advance.

There has been a fair order demand, and local distributors have continued to fill orders at the following discounts for shipments from local stocks:

|                          | Steel. | Iron. |
|--------------------------|--------|-------|
| 1 to 1¼ inches.....      | 40     | 35    |
| 1¼ to 2¼ inches.....     | 50     | 32½   |
| 2¼ to 5 inches.....      | 57½    | 42½   |
| 6 inches and larger..... | 50     | ..    |

**Merchant Steel.**—There has been further improvement noted in this line, some satisfactory orders having been closed for Spring Steel. There has also been a better demand for other kinds, with contracts aggregating about 2000 tons placed for the 1903-1904 season. There has been an increased demand for Shafting and Screw stock. The market has continued steady at previous prices for mill shipment, as follows: Smooth Finished Machinery Steel, 2.01½c. to 2.11½c.; Smooth Finished Tire, 1.96½c. to 2.11½c.; Open Hearth Spring Steel, 2.66½c. to 2.76½c.; Toe Calk, 2.31½c. to 2.46½c.; Sleigh Shoe, 1.86½c. to 1.96½c.; Cutter Shoe, 2.41½c. to 2.61½c. Ordinary grades of Crucible Tool Steel are quoted at 6c. to 8c. for mill shipment; Specials, 12c. upward. Cold Rolled Shafting in carload lots sells at 47 and in less than carload lots at 42 discount from list.

**Rails and Track Supplies.**—There has continued to be a good inquiry for both Standard and Light Sections, but sales in this market have been small, aggregating only be-

tween 3000 and 4000 tons, and taken mainly by Eastern mills. One contract for 20,000 tons, however, for shipment during the last quarter of the year was placed at St. Louis. Several thousand tons of Light Rails were sold for early shipment. A strong tone has continued to prevail, official prices being unchanged at \$28 for Standard and \$27 for second quality, mill shipment. Light Rails sell readily at \$35 to \$40, according to weight. Track Supplies have remained steady with a fair demand, the market remaining steady at previous prices, which are as follows for mill shipment, Chicago: Splice or Angle Bars, 2c. to 2.10c.; Spikes, 2.10c. to 2.15c.; Track Bolts,  $3\frac{1}{2}$  to  $3\frac{3}{4}$  inches and larger, with Square Nuts, 2.85c. to 2.90c.; with Hexagon Nuts, 3c. to 3.10c. From store, 10c. to 15c. over mill prices are asked and obtained.

**Old Material.**—There has been a further drop of 50c. to \$1 a ton under free offerings and continued pressure to sell, but dealers have purchased more freely, although they have little outlet through the mills. Several thousand tons of various kinds have changed hands in lots from 100 to 700 tons. Among the sales have been 700 tons of Old Iron Rails at \$20.20, and 300 tons of Old Steel Rails, long lengths, at \$20. There has been a further general revision of prices, as noted below. The following are the prices current per gross ton, Chicago:

|                                     |                    |
|-------------------------------------|--------------------|
| Old Iron Rails.....                 | \$20.00 to \$20.50 |
| Old Steel Rails, mixed lengths..... | 17.00 to 17.50     |
| Old Steel Rails, long lengths.....  | 19.50 to 20.00     |
| Heavy Relaying Rails.....           | 31.00 to 31.50     |
| Old Car Wheels.....                 | 21.50 to 22.00     |
| Heavy Melting Steel Scrap.....      | 16.50 to 17.00     |
| Mixed Steel.....                    | 14.50 to 15.00     |

The following quotations are per net ton:

|                                       |                    |
|---------------------------------------|--------------------|
| Iron Fish Plates.....                 | \$17.00 to \$17.50 |
| Iron Car Axles.....                   | 21.00 to 22.00     |
| Steel Car Axles.....                  | 20.00 to 21.00     |
| No. 1 Railroad Wrought.....           | 15.00 to 16.00     |
| No. 2 Railroad Wrought.....           | 14.00 to 14.50     |
| Shafting.....                         | 17.00 to 18.00     |
| No. 1 Dealers' Forge.....             | 13.00 to 14.00     |
| No. 1 Bushing and Wrought Pipe.....   | 12.50 to 13.00     |
| Iron Axle Turnings.....               | 12.50 to 13.00     |
| Soft Steel Axle Turnings.....         | 12.50 to 13.00     |
| Machine Shop Turnings.....            | 12.00 to 12.50     |
| Cast Borings.....                     | 7.00 to 7.50       |
| Mixed Borings, &c.....                | 8.00 to 9.00       |
| No. 1 Boilers, cut.....               | 13.00 to 14.00     |
| Heavy Cast Scrap.....                 | 14.00 to 14.50     |
| Stove Plate and Light Cast Scrap..... | 10.00 to 10.50     |
| Railroad Malleable.....               | 15.00 to 15.50     |
| Agricultural Malleable.....           | 14.00 to 14.50     |

**Metals.**—Copper has been dull and weak with a further decline in prices. Casting Copper is offered at 14c., and Lake is held at 14 $\frac{1}{2}$ c., Chicago, but these prices possibly could be shaded. Spelter is active and strong, producers being well sold up to the middle of July, and are taking no new business for prompt shipment. Prices have advanced to 5.60c. in carload lots. Sheet Zinc is scarce and nominal. Old Metals have been in fair demand and easy, but without further change in the prices of Copper and Brass, while Zinc has advanced in sympathy with new material. Heavy Cut Copper sells at 12c., Red Brass at 11 $\frac{1}{4}$ c., Copper Bottoms at 10 $\frac{1}{4}$ c., Lead Pipe at 4c. and Zinc at 4.40c. spot.

**Coke.**—The market for spot supplies has continued heavy, with little demand and free offerings, and some sales of Foundry Coke have been made to gas companies at lower prices, among them being 35 cars at \$4.90; also a liberal sale of Furnace Coke at \$4.50, f.o.b. cars, Chicago. Contracts for the last half of the year are held a little more firmly, but not much business has been closed. Furnace Coke is quotable at \$2.50 to \$3.50, and Standard Foundry Coke at \$3.50 to \$4.25 at the ovens. Standard Foundry Coke is quotable at \$4.90 to \$5.90 spot track, Chicago.

## Philadelphia.

FORREST BUILDING, June 16, 1903.

The Iron and Steel markets have not improved during the past week. The demand has been of the smallest character possible, and 500 or 1000 ton sales have been rarely met with. There is more inquiry, however, and it looks as though buyers had more interest in the market, but the resultant sales so far have been very disappointing. Under such circumstances prices are more or less irregular, but they are unquestionably weak, and as regards Pig Iron they are distinctly lower. It is difficult to give exact quotations, because in the usual sense of the word there is no market, prices being adjusted according to the circumstances in each particular case. The \$20 figure for No. 2 X Foundry is becoming a tradition of the past, although some claim to be doing even better than that, but 50c. less, would be a full average figure to-day, and \$19 is by no means exceptional; but large buyers are not in the market at that figure, and if orders of any magnitude were offered there is reason to believe that liberal concessions from that point would be made. This, of course,

does not imply that business is absolutely dead, because deliveries are about as large as they have ever been, but it does indicate a radical readjustment of values and a gradual approach to safe conditions. With Pig at \$20 and upward, foreign Iron would continue to be imported, and it may be that too many American furnaces would also be in operation. Every dollar decline will be a corrective and tend to adjust production in proportion to consumers' requirements. What these will be is problematical, but there is reason to fear that they will not be as large as they were during the corresponding period of last year. It is hardly worth while to discuss the whys and wherefores, as the unfavorable conditions are in any case too indefinite to be considered as beyond remedy, although enough is known to make it certain that any material recovery during the present year is out of the question. For the present, however, it is not likely that there will be much further change until after the holidays, and by that time it is hoped that the labor, the crop and the financial situation will have become more satisfactory than they are at the present time.

**Pig Iron.**—Business is extremely light, with little, if anything, called for except in car lots, or from that to 200 or 300 hundred tons. Consumption is well maintained and deliveries are about as they have been, so that furnaces are still in excellent condition, although makers of Iron are all anxious for new contracts. Buyers, however, are undecided as to prices and are therefore drifting along until they are compelled to buy, or are satisfied that there is nothing more to be gained by waiting. Meanwhile this is beginning to have its effect on the selling interests, who recognize that while they have no immediate need of business, every day brings them nearer to the point when they will need it. The question of prices is therefore the only obstacle to immediate activity, but what they are to be is a difficult matter to determine. From present appearances sellers would not hesitate at \$19, delivered, for No. 2 X Foundry, but as buyers make no serious attempts to place orders for any considerable quantities, the market is in abeyance pending further developments. There is little doubt that a start will be made some time within the next 30 days, but there is considerable uncertainty as to what the prices may be. For the present the range would be about as follows for Philadelphia and nearby points:

|                      |                    |
|----------------------|--------------------|
| No. 1 X Foundry..... | \$20.50 to \$21.00 |
| No. 2 X Foundry..... | 19.00 to 20.00     |
| No. 2 Plain.....     | 18.50 to 19.00     |
| Gray Forge.....      | 17.75 to 18.25     |
| Basic.....           | 18.50 to 19.00     |

Cargo lots c.i.f.:

|                            |                    |
|----------------------------|--------------------|
| Low Phosphorus, 0.035..... | \$20.85 to \$21.00 |
| Middlesbrough, No. 3.....  | 16.75 to 17.00     |

**Steel.**—A great deal of Steel is being inquired for, but sales are disappointing. Makers quote about \$30, f.o.b. cars, local mills; but buyers consider that they should get it at that price delivered, and for large lots they stand a fair chance of being accommodated. Nothing doing in foreign Steel and it is believed that imports hereafter will not be very large, although it is probable that the sales of Canadian Steel at \$27.50, reported last week, were for export, subject to the usual drawback of duty.

**Plates.**—There is a moderately good demand, but prices are not as firm as could be desired, although they are supposed to be held at base quotations. Mills have a great many orders on their books and will probably have full employment for some time to come, although there is rather close competition on good sized orders. The outlook is not specially bright, but with the near approach of the midsummer holidays, it is hardly likely that much new work will be given out. After that date it may be necessary to readjust opinions; meanwhile quotations are as follows: Small lots, 1.90c. to 1.95c.; carload lots,  $\frac{1}{4}$ -inch and thicker, 1.75c. to 1.80c.; Universals, 1.80c.; Flange, 1.90c.; Marine, 2c. to 2.05c.; Fire Box, 2.10c. to 2.20c.

**Structural Material.**—Business is very slow in this department, but with a settlement of the labor question, it is believed that considerable activity will be met with during the last half of the year. Prices unchanged, as follows: Beams, Angles or Channels, ordinary sizes, 1.73 $\frac{1}{4}$ c. to 1.80c. for carload lots, with the usual addition for smaller quantities.

**Bars.**—The Bar situation is in a most unsatisfactory condition, and quite a number of mills are preparing to shut down preparatory to the usual midsummer vacation. Prices of Refined Iron are irregular. In most cases about 1.80c. is asked for car lots, but it is intimated that lower figures have been accepted on desirable business, and that 1.80c. is rather an exceptional price, although some mills have refused orders at that figure. Steel Bars are quoted at 1.70c. to 1.75c., according to circumstances.

**Sheets.**—There is no change from last week. The demand is fair, but prices are irregular, and bids are not usually such as can be accepted for best qualities of Sheets. Sales are therefore mostly for lots for early shipment, orders for late deliveries being held in abeyance pending further developments.

**Old Material.**—The market is extremely dull, and everything but Steel seems to be totally neglected. Prices are very irregular, but as near as can be given, bids and offers are about as follows for deliveries in buyers' yards:

|  |                    |
|--|--------------------|
| Old Steel Rails.....                   | \$21.00 to \$21.25 |
| Heavy Steel Scrap.....                 | 20.50 to 21.00     |
| Low Phosphorus Scrap.....              | 26.00 to 28.00     |
| Old Steel Axles.....                   | 22.00 to 23.00     |
| Old Iron Rails.....                    | 23.00 to 24.00     |
| Old Iron Axles.....                    | 26.00 to 27.00     |
| Old Car Wheels.....                    | 21.50 to 22.50     |
| Choice Scrap, R. R. No. 1 Wrought..... | 20.50 to 21.00     |
| Country Scrap.....                     | 19.00 to 19.50     |
| Machinery Scrap.....                   | 18.50 to 19.00     |
| No. 2 Light Scrap.....                 | 18.00 to 18.50     |
| No. 2 Light (Ordinary).....            | 13.00 to 13.50     |
| Wrought Turnings.....                  | 15.00 to 15.50     |
| Wrought Turnings, Choice Heavy.....    | 16.00 to 16.50     |
| Cast Borings.....                      | 10.00 to 10.50     |
| Stove Plate.....                       | 14.00 to 15.00     |

### Cleveland.

CLEVELAND, OHIO, June 16, 1903.

**Iron Ore.**—The vessel owners of the lakes have decided to lay up some of the smaller boats engaging in the Ore trade in the hope of advancing the carrying charges on wild tonnage. The task so far has been hopeless, as the withdrawal of the few boats willing to go to the dock has not been noticed in the great excess of carrying capacity. The market has been firm therefore at old figures, although some talk was indulged in of making further cuts in rates, 75c. from the head of the lakes having been mentioned. The Steel Corporation must take the initiative in such a movement and they are not disposed to make a further invasion of the established rates. Carrying charges are therefore steady at 80c. from Duluth, 70c. from Marquette, and 60c. from Escanaba, all to Lake Erie ports. Nothing has been heard of sales of importance. Prices are unchanged, standing at \$4.50 for Bessemer old range and \$4 for Bessemer Mesaba as a basis.

**Pig Iron.**—The Foundry Iron situation is picking up rapidly. There have been numerous inquiries for the second half of the year, but they have not yet advanced to the point where sales have been made. Consumers feel that the market has about reached a level where they can do business. The furnaces have held for \$20, Valley furnace, but it is generally believed that No. 2 Foundry will bring about \$19 to \$19.50. In Bessemer very little is being done. Most of the material for third quarter consumption has been sold. The association has sold no Iron to the Steel Corporation or others for fourth quarter delivery. The independent furnaces have reported some sales, but these have been mostly for third quarter delivery. Definite and exact quotations of the market at the present time are difficult because of the wide range of prices heard. The market is perhaps best represented by a quotation of from \$18.50 to \$19.35, Valley furnace. The first is the inside association price, and the last is the outside independent furnace price. In Basic the producers are still inclined to learn more of the possibilities of production during the second half before they are willing to make extensive sales. Many of the stacks in this territory have not yet caught up on old contracts, and may not be free of them for some time. The others have sold considerable amounts at the higher prices on second half material recently prevailing. Under the circumstances an exact quotation is not possible. The price would probably be about \$18.75 in the Valley for third quarter delivery. Production in the Valleys has been very heavy, and the shipments have corresponded. The consumption therefore it all that could be desired. The Coke supply gives no cause for complaint.

**Finished Iron and Steel.**—The market in this territory has been naturally bullish all week, with better indications than shown before in months. Structural is, perhaps, in the best condition of any. The cessation of labor difficulties permitted some of the consumers to come in and specify against their old contracts. Some of them also have placed new orders of considerable importance. The smaller mills, however, have not gained any increase of advantage by this situation, although the jobbers are feeling somewhat stronger. In one instance a jobber in this territory had made a temporary offer of 1.90c., Cleveland, on Structural out of stock, and last week this was withdrawn and the old stock quotation of 2.15c. to 2.25c., Cleveland, was resumed. The mills are able to make deliveries from three or four weeks to four or five months, according to the size needed. There is plenty of the smaller shapes generally, the middle sizes being scarce. Plates have been about as they were, no radical change in the situation being seen. The demand of the consumers supplying railroads has been eased by the constant hammering of stocks in Wall street, which has been reflected in retrenchments felt in car and locomotive works, which order through this territory. The smaller mills are easing in their demand for premiums and have not been at all mandatory. It is now realized that 1.90c., Cleveland, is the outside premium price, with considerable shading of this price possible. The Sheet trade has been stronger, with prices firm. Black Sheets out of stock are perhaps best quoted on

a basis of 3.15c. for No. 27 out of stock. Stock quotations of Galvanized Sheets are as follows, Cleveland: No. 14, 2.90c.; No. 16, 3c.; Nos. 18-20, 3.20c.; Nos. 22-24, 3.50c.; No. 26, 3.75c.; No. 27, 4c.; No. 28, 4.25c. Black Sheets, blue annealed, in carload lots from the mills, are quoted as follows: No. 10, 2c.; No. 12, 2.10c.; No. 14, 2.20c.; No. 16, 2.30c.; one pass cold rolled, No. 18-21, 2.45c.; No. 22-24, 2.55c.; No. 26, 2.65c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.10c. The Bar Iron market is weak. Some of the mills are holding to the quotation of 1.80c., Youngstown, but they are doing no business at that figure. The market is best represented at 1.70c., Youngstown, and choice orders might bring a further reduction if the consumer were disposed to go after it. Bar Steel is strong, with considerable inquiry. The large buyers have not covered yet. These prices have held firm at 1.60c. for Bessemer and 1.70c., Pittsburgh, for Open Hearth. There has been a good call for Bessemer Billets, with hardly any sales possible because of the shortage of that material. The prices have held firm at between \$30 and \$31, Pittsburgh. The inquiries for Rails have been steady from the electric lines, but no transactions are reported. Light Rails are in good demand. Prices have held firm at \$28 for Standard, and \$36, Pittsburgh, for Light Rails.

**Old Material.**—The market has been dead, but there is a scarcity of material, and this inclines to keep the prices up. The quotations are slightly revised and continued with the understanding that they represent the present market as nearly as anything, but with the further understanding that a considerable reduction would probably be forced were any business to be done for the second half. We quote, all gross tons: Heavy Melting Steel, \$20.50; Old Steel Rails, \$20.50; Old Iron Rails, \$25.50; Car Wheels, \$25; Railroad Malleable, \$19.50; Miscellaneous Malleable, \$17; Cast Borings, \$12. All net tons: No. 1 Railroad Wrought, \$19.50; No. 1 Bushing, \$16.50; Wrought Turnings, \$14; Iron Car Axles, \$26; Cast Scrap, \$16.50; Stove Plate, \$12.50.

### Cincinnati.

FIFTH AND MAIN STS., June 17, 1903.—(By Telegraph.)

In Pig Iron the situation remains practically unchanged both as to prices and outlook for nearby trade. What business there has been in Foundry Irons has been on the retail order, very few entries being for larger amounts than 100 tons. The volume of this sort of trade shows a good steady increase, and suggests a period of this sort of activity. In Forge Irons there is nothing doing at all, and few authorities can be found who have had any inquiries for Iron of this general grade. Basic is actively in demand, and there is also something doing in malleable grades. The association furnaces appear to be holding firmly to their established schedule of \$15, Birmingham, basis for No. 2 Foundry. On this scale they are perhaps being knocked out of a number of sales, which are taken in by the furnaces who are selling as low as \$14, but they are also securing a fair percentage of current trade at their own figures from customers who care more for special brands than for a difference of 50c. per ton. Freight rates from the Hanging Rock district, \$1.15, and from Birmingham to Ohio River points, \$3.25. We quote, f.o.b. Cincinnati, for delivery throughout the year, as follows:

|                                |                    |
|--------------------------------|--------------------|
| Southern Coke, No. 1.....      | \$18.25 to \$18.75 |
| Southern Coke, No. 2.....      | 17.75 to 18.25     |
| Southern Coke, No. 3.....      | 17.25 to 17.75     |
| Southern Coke, No. 4.....      | 16.50 to 17.00     |
| Southern Coke, No. 1 Soft..... | 18.25 to 18.75     |
| Southern Coke, No. 2 Soft..... | 17.75 to 18.25     |
| Southern Coke, Gray Forge..... | 16.50 to 17.00     |
| Southern Coke, Mottled.....    | 16.50 to 17.00     |
| Ohio Silvery, No. 1.....       | 25.15 to 26.15     |
| Lake Superior Coke, No. 1..... | 20.15 to 20.65     |
| Lake Superior Coke, No. 2..... | 19.15 to 19.65     |
| Lake Superior Coke, No. 3..... | 18.15 to 18.65     |

#### Car Wheel and Malleable Irons.

|  |                    |
|--|--------------------|
| Standard Southern Car Wheel.....           | \$26.75 to \$27.00 |
| Lake Superior Car Wheel and Malleable..... | 24.75 to 25.25     |

**Plates and Bars.**—We quote, f.o.b. Cincinnati: Iron Bars, in carload lots with half extras, 1.75c.; same, in small lots with full extras, 2.20c.; Steel Bars, in carload lots with half extras, 1.75c.; same, in small lots with full extras, 2c.; Base Angles, 1.70c.; Plates, 1/4-inch, 1.70c.; Beams and Channels, 1.70c.

### St. Louis.

CHEMICAL BUILDING, June 17, 1903.—(By Telegraph.)

**Pig Iron.**—Tonnage is still light, but improvement is said to be felt in the inquiry and orders for quick shipment Iron. Foundry Irons do not seem to be in call for future delivery, but it is said that some few orders for Malleable Bessemer, Basic and other grades have been closed. There has been a rapid improvement in the railway situation at this point from the unfavorable conditions recently brought about by the floods. We quote, f.o.b. St. Louis, as follows:

|                              |                    |
|------------------------------|--------------------|
| Southern, No. 1 Foundry..... | \$19.25 to \$19.50 |
| Southern, No. 2 Foundry..... | 18.75 to 19.00     |
| Southern, No. 3 Foundry..... | 18.25 to 18.50     |

|  |          |       |
|--|----------|-------|
| Southern, No. 4 Foundry.....           | 17.25 to | 18.00 |
| No. 1 Soft.....                        | 19.25 to | 19.50 |
| No. 2 Soft.....                        | 18.75 to | 19.00 |
| Gray Forge.....                        | 17.00 to | 17.25 |
| Southern Car Wheel.....                | 27.25 to | 27.50 |
| Malleable Bessemer.....                | 20.00 to | 20.50 |
| Ohio Silvery, 8 per cent. Silicon..... | 27.00 to | 27.25 |
| Ohio Strong Softeners, No. 1.....      | 23.25 to | 23.50 |
| Ohio Strong Softeners, No. 2.....      | 23.50 to | 23.75 |

**Bars.**—The demand the past week upon the jobbing trade has been of moderate order, and it is said that with general local conditions back to their normal state trade will continue to improve. We quote from the mills: Iron Bars at 1.80c. to 1.90c.; Steel at 1.80c. to 1.90c., half extras. Jobbers continue to make quotation of 2.15c. in round lots, with a 5c. to 10c. higher rate in small quantities for both Iron and Steel Bars.

**Rails and Track Supplies.**—The market conditions in this department continue very strong and it is said in trade circles that business keeps up to a high standard, with the volume of new inquiry keeping up very well. We quote as follows: Splice Bars, 2.05c. to 2.25c.; Bolts, with Hexagon Nuts, 3.05c. to 3.25c.; Bolts, with Square Nuts, 2.90c. to 3.05c.; Spikes, 2.20c. to 2.30c. Jobbers' quotations 10c. to 15c. higher, from store.

**Angles and Channels.**—The general run of trade through jobbing channels in this department is said to be very fair. For material of this class 2.25c. to 2.40c., from store, according to quantity.

**Spelter.**—The continued scarcity of the metal has had the tendency to force spot delivery offerings to a higher level, 5.55c. to 5.60c. now being the quotation. Futures are quoted at 5.40c. to 5.50c.

## Birmingham.

BIRMINGHAM, ALA., June 15, 1903.

The wise man now has very little to say of the Iron market in a prophetic way. There are disturbing factors that confront him, as there are at this season of every year, and until they are settled no one can intelligently diagnose the situation. So far as can be ascertained, the prices fixed at the late conference are being rigidly maintained. There has been no deviation from the tariff agreed upon then, but the increased buying that was anticipated has proven to be "a will o' the wisp." Orders are coming in, but are not pressing on each other. They still represent absolute necessities and nothing else. They lack the snap that always is an attendant when there is confidence in the market. In volume they are limited and in time they are limited; also, as in the majority of cases, urgent appeals accompany or follow orders to ship promptly, as supplies are about exhausted. As far as can be found, there are but few orders being registered for delivery the last half of the year. Prompt delivery is the slogan cry with the majority of orders. In some cases orders anticipate wants for a month or so in advance, but do not often run beyond that time. A great disturbing feature as to prices is the rumors floating around squinting at reduced values by the independent interests. But they are denied by those whose names are used in connection with them, and except on incontrovertible evidence they should be discredited. Your correspondent has been specially inquisitorial on this point and has unearthed nothing so far to give credence to the reports. The independent interests, as they are styled, are not in a position to throw down the gauntlet as to prices and cut loose from the associated interests, for in the item of costs the latter have the advantage, and there is no way to change it, as they have the proprietary advantage derived from ownership from the lowest stair to the top step. Prices between them are not, therefore, a matter of competition so much as a matter of policy, and each knows that it takes only a twist to let down the umbrella hoisted to shade the market and make it comfortable for all. Reports have been rife as to shading of association prices, but as a rule they emanate from sources away from this market and do not obtain credence. There is one thing certain, and that is that efforts to buy at the cut rates published as prevailing have not met with success, and if there has been any shading of prices it has been given no publicity. The drop in prices has necessitated the rearrangement of some accounts that has placed some Iron on the market that had been previously placed. This always occurs when the market goes against the buyers and is to be entered under the head of undelivered contracts, and finally finds its way into the profit and loss column. It can't be helped and only creates the red ink column with which the credit manager has to deal.

Now as to stocks in furnace yards, that has been a matter of current gossip in the furnace circles, and no two of them agree as to the result. But it can be said that 75,000 tons will cover the probable amount in storage yards, and it is held by interests amply able to protect it.

The buyers seem now to anticipate that there will be an increase in furnace stocks and are influenced accordingly. But the holders do not express any fears on that account and talk confidently of the maintenance of prices.

The annual meeting of the United Mine Workers is in session this week, but their programme has not yet been developed, and there has been no material for comment yet leaked out more substantial than suppositions. Labor is pretty well organized now in this district and it is becoming more and more united every year.

Exploitation and development of Coal and Mineral properties are still active, and improvements of properties now being worked are constantly being made. Capitalization has been increased to keep pace with increased business and improvements and additions that are being made are of a more permanent character than has obtained in the past.

The Steel mill is turning out Steel Rails and will gradually increase the output as circumstances warrant. So far the product has received only commendation. We are still in furnace output materially below our maximum capacity and are likely to remain so for some time to come.

## Pittsburgh.

PARK BUILDING, June 17, 1903.—(By Telegraph.)

**Pig Iron.**—While the Pig Iron market is quiet as far as sales go, yet inquiries so far this month have been fairly good, and it is believed there will be more liberal buying just as soon as consumers are satisfied that the market has touched bottom. It is a fact, however, that a number of local concerns who are large consumers of foundry Iron are pretty well covered for some time. Some fair sized inquiries are in the market for Standard Bessemer and also for Malleable Bessemer for delivery over the last six months of the year. Just now there is hardly enough selling to fix prices, but Standard Bessemer is held at about \$19.00, Valley furnace, for fair sized lots, and \$18.50 to \$18.75 for large lots for shipment over last half of the year. Northern Forge is \$18.75 to \$19, and Southern is \$18.60, Pittsburgh. Northern No. 2 Foundry is \$20 to \$25, and Southern No. 2 Foundry is \$19.85, Pittsburgh.

**Steel.**—The Steel market is somewhat quiet and only small lots are changing hands. Bessemer Billets are held at \$29 to \$29.50 and Open Hearth \$29.50 to \$30, Pittsburgh, for small lots and prompt shipment. Large lots of Steel for forward delivery could be bought at lower prices. The heavy consumers of Steel who buy on long time contracts and on a sliding scale basis are now getting the benefit of the lower prices ruling for Bessemer Iron, their Steel being billed to them at lower figures than for some time.

(By Mail.)

Matters in the Iron trade continue in about the same condition as noted in this report last week. Buying of Pig Iron, Steel and Finished Material is light, consumers proceeding very cautiously and placing small orders for nearby delivery. At the end of this month a great many Iron and Steel plants will close down for extended repairs, and some of the leading mills will be closed for several months. In fact, stoppages may be for a longer period, in case the strikes of the machinists and boilermakers are not fixed up. A number of the leading Steel plants will be closed, and this may cause something of a shortage in Billets. From all directions reports are that the building strikes throughout the country are interfering very seriously with demand for Iron and Steel products of all kinds, and there is no doubt whatever but that this is the case. This applies more particularly to Materials entering into building construction, such as Sheets, Wire Nails and other products. The effect of these strikes is far reaching, and the injury they are doing can hardly be estimated. Sales of Pig Iron during the week have been light, consumers still pursuing a waiting attitude, especially on Foundry and Forge Irons. Bessemer Iron, in small lots for early delivery, is held at \$19, at Valley furnace, or \$19.85, Pittsburgh. For large lots and extended delivery, \$18.50 to \$18.75, at furnace, would be done. Northern Forge Iron is \$18.75 to \$19, and Southern, \$18.60, Pittsburgh. Some of the Southern furnaces whose freight rates are less than those located in the Birmingham district are offering Forge Iron as low as \$18.50, Pittsburgh. Northern No. 2 Foundry is about \$20, Pittsburgh, but on a firm offer

this would probably be shaded. The official price of Southern No. 2 is \$19.85, Pittsburgh, but buying is from hand to mouth, no large lots being placed.

**Steel Rails.**—The report that the E. H. Harriman interests, representing the Union Pacific and Southern Pacific railroads, have placed contracts for 100,000 tons of Steel Rails for delivery in 1904 is officially denied. As yet the price of Steel Rails for 1904 delivery has not been fixed, but the Steel Rail mills will have a meeting in a short time, when this will be done. There have been a number of inquiries for Rails for next year delivery, but so far nothing definite has been done. It is believed the present price of \$28 for Standard Sections in 500-ton lots and over will be adopted for next year. At present only small lots are being placed.

**Structural Material.**—No large lots have recently been placed in this district and the strikes in the building trades are holding up a great deal of work. Deliveries of Structural Steel are now being made promptly by the mills. There is no change in prices and we quote: Beams and Channels up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c. to 1.70c.

**Plates.**—A moderate amount of new tonnage is being placed, but demand is not nearly so active as some time ago. Some of the Eastern mills are said to be a little slack of work and for this reason premiums for prompt deliveries are no longer paid. Several of the larger Plate mills will close about July 1 for extensive repairs. The large Plate mill at the Shoenberger Works, which has been shut down for several weeks, will start up in a few days. Prices as reaffirmed at the recent meeting of the Steel Plate Association are as follows: Tank Plate, 1/4-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price up to 3c. Plates more than 100 inches wide, 5c. extra per 100 lbs. Plates 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

**Iron and Steel Bars.**—While a fair amount of new tonnage in both Iron and Steel Bars is being placed, yet new business is not up to expectations and all of the leading Steel Bar mills could take care of more work if they had it. Prices on both Iron and Steel Bars are firm, Iron Bars being held at about 1.75c., half extras as per National card. We quote Steel Bars at 1.60c., at mill. All specifications for less than 2000 lbs. of a size subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10c. per lb. extra. Quantities less than 1000 lbs., 0.30c. per lb. extra, the total weight of a size to determine the extra regardless of length.

**Sheets.**—Demand for Black Sheets is reported to be slightly more active, and most of the leading mills are fairly well filled up. As long as Sheet Bars continue as firm as they are at present, there is not much probability of any marked decline in prices of Sheets. We quote Black Sheets as follows: Nos. 22 and 24, Box Annealed, one pass through cold rolls, 2.45c.; No. 26, 2.55c.; No. 27, 2.65c. to 2.75c., and No. 28, 2.75c. to 2.85c. We quote Galvanized Sheets at 75 and 10 off in carload and larger lots for desirable orders.

**Rods.**—Prices on Bessemer Rods are showing a slightly easier tendency, at \$36.50, Pittsburgh. Open Hearth Rods are held at \$37 for ordinary carbons.

**Muck Bar.**—The market is extremely dull and prices are very weak. We quote best grades of Muck Bar at \$34, Pittsburgh, but on a firm offer this would probably be materially shaded.

**Hoops and Bands.**—Only a fair amount of new tonnage is being placed and the mills could take care of more work if they had it.

**Ferromanganese.**—No large lots have been placed. We quote 80 per cent. Ferro at \$50 in large lots, delivered.

**Merchant Steel.**—There are no special features to note in this market. Some kinds of Agricultural Steels are in good demand, but Tool Steel and Shafting are somewhat quiet. We quote: Tire Steel, 1.80c. to 1.90c.; Open Hearth Steel, ordinary grades, 1.70c. to 1.80c.; Open Hearth Spring, 2.25c. to 2.35c.; Cant Hook Steel, 2.75c. to 3c.; Plow Slabs, Bessemer, 2.50c.; Plow Slabs, Open Hearth, 2.75c. to 2.85c.; Tool Steel, ordinary grades, 6 1/2c. and upward; Cold Rolled Shafting, 42 per cent. off in less than carloads, and 47 per cent. in carloads, delivered in base territory.

**Tin Plate.**—Demand continues abnormally heavy and the leading mills are filled up for several months. We quote 100-lb. Cokes at \$3.90 to \$4 a box. The official price of the leading interest is \$3.80 per box, f.o.b. Pittsburgh.

**Iron and Steel Skelp.**—While demand for Skelp is quiet, prices are reasonably firm. Most of the large Pipe makers have their own Skelp mills, and are not buyers to

any extent in the open market, but, on the other hand, some of them are sellers. We quote Grooved Iron and Steel Skelp at 1.90c., and Sheared at 2c., Pittsburgh, terms 30 days less 2 per cent. for cash in 10 days.

**Merchant Pipe.**—It is claimed that the Pipe market, as regards demand and stability in prices, is the best department of the whole Iron and Steel market. It is a fact that demand for Pipe is taxing the utmost capacity of the mills and prices are being very rigidly held. Some inquiries are in the market for small sized gas and oil lines, which will take a moderate tonnage. Prices to consumers in carloads are as follows:

|                                | Steel.    |           | Wrought Iron. |           |
|--------------------------------|-----------|-----------|---------------|-----------|
|                                | Black.    | Galv.     | Black.        | Galv.     |
|                                | Per cent. | Per cent. | Per cent.     | Per cent. |
| 3/8, 1/2 and 3/4 inch.....     | 68        | 58        | 65            | 55        |
| 1/2 inch.....                  | 70        | 60        | 67            | 57        |
| 3/4 to 6 inches.....           | 75        | 65        | 72            | 62        |
| 7 to 12 inches.....            | 69        | 59        | 66            | 56        |
| Plugged and Reamed:            |           |           |               |           |
| 1 to 4 inches.....             | 73        | 63        | 70            | 60        |
| Cut 3 to 6 feet:               |           |           |               |           |
| 3/8, 1/2 and 3/4 inch.....     | 63        | 52        | 60            | 49        |
| 1/2 inch.....                  | 65        | 54        | 62            | 51        |
| 3/4 to 6 inches.....           | 71        | 60        | 68            | 57        |
| 7 to 12 inches.....            | 65        | 53        | 61            | 50        |
| Cut 6 feet and longer:         |           |           |               |           |
| 3/8, 1/2 and 3/4 inch.....     | 64        | 53        | 61            | 50        |
| 1/2 inch.....                  | 66        | 55        | 63            | 52        |
| 3/4 to 6 inches.....           | 72        | 61        | 69            | 58        |
| 7 to 12 inches.....            | 66        | 54        | 62            | 51        |
| Extra Strong Plain End:        |           |           |               |           |
| 1/2 to 8 inches.....           | 67        | 57        | 63            | 53        |
| Threads only.....              | 66        | 56        | 62            | 52        |
| Threads and Couplings.....     | 65        | 55        | 61            | 51        |
| Double Extra Strong Plain End: |           |           |               |           |
| 1/2 to 8 inches.....           | 59        | 49        | 55            | 45        |
| Threads only.....              | 58        | 48        | 54            | 44        |
| Threads and Couplings.....     | 57        | 47        | 53            | 43        |

NOTE.—Orders for less than carload will be charged at 12 1/2 per cent. advance. Extra and Double Extra Strong Cut Lengths, lower random discounts by 10 per cent. net for 6 feet and longer, and 15 per cent. net for 3 to 6 feet.

We may note, however, that some of the outside mills quote slightly lower prices on Iron Pipe than are given above.

**Coke.**—The condition of the Coke market is not satisfactory to the producers, output being larger than demand, with the inevitable result that some low prices are being made. We understand that some contracts for Furnace Coke for shipment over last six months of the year have been made as low as \$2.75, at oven, for strictly Connellsville Furnace Coke, while other contracts placed some time since are at higher figures. It is not unlikely that in the near future a number of the small Coke plants in the Connellsville region, having from 100 to 300 ovens, will be consolidated. The output of small plants could be marketed by one concern to much better advantage than individually, as is done at present. Output of Coke last week in the Upper and Lower Connellsville regions was 304,322 tons. Strictly Connellsville Furnace Coke on contracts for last six months of the year is held at about \$2.75 to \$3 a ton at oven. Foundry Coke is held at \$3.50 to \$4 a ton at oven.

The firm of Peterson, Seburn & Co. have been organized at Pittsburgh, with offices and yards at Forty-fourth street and Allegheny Valley Railroad in that city. The firm will carry on the business of Riggers and Structural Iron Erectors and will move heavy machinery. The members of the new concern are Robert Peterson, John Seburn and P. J. Brennan, Jr.

The Cherry Valley Iron Company, People's Bank Building, Pittsburgh, operating blast furnaces at Leetonia, Ohio, and West Middlesex, Pa., have established an office in rooms 903, 904 Citizens Building, Cleveland, Ohio, with C. H. Lewis, manager of sales, in charge of that district. The Cherry Valley Iron Company market the output of the blast furnaces at Leetonia and West Middlesex, while Joshua W. Rhodes & Co., an identified interest, are shippers of Coke from their own ovens in the Connellsville district.

### The Ft. Wayne Iron & Steel Company.

CHICAGO, ILL., June 16, 1903.—Interests identified with the American Rolling Mill Corporation have organized the Ft. Wayne Iron & Steel Company with a capital stock of \$175,000. Edward Yarnelle of Ft. Wayne has been elected president and John Sale treasurer. The following are the directors: J. T. Evans, Robert Willard, John W. Sale, Edward F. Yarnelle and Walter Olds of Ft. Wayne, Ferdinand W. Peck, Clarence I. Peck, John H. Palmer and Walter I. Moody of Chicago. The plant will consist of a modern bar iron rolling mill with a capacity of 45,000 tons per annum.

Prof. H. M. Howe of Columbia University has gone abroad. Being his sabbatical year, he will not return until the fall of 1904.

## The New York Machinery Market.

NEW YORK, June 17, 1903.

Trade conditions are practically unchanged. General business is rather quiet, but there are no signs of any serious weakening in values. It is reported that some boiler prices have shown weakness, several orders being taken lately at concessions. The market for contractors' machinery is very poor owing to the cessation of building in New York City. Prices of hoisting engines are being cut considerably. Machine tool prices are not suffering, as machine tool builders are still behind on their orders and are experiencing a better demand than exists in other lines. There is talk in the street of some machine tool prices being advanced on July 1. Business in traveling cranes has fallen off somewhat during the last few weeks, as a result of labor disturbances which put back new building operations.

It is now generally admitted that the strikes and lockouts of the spring and early summer, together with the anticipation of trouble on the employers' part, have driven a good deal of business away, with the result that a quiet summer must ensue.

One redeeming feature of the situation is that almost every one in the trade is of the same opinion as to the future of business. Every one expects to experience a quiet summer and is conducting affairs accordingly. In all things a very conservative tone prevails. It is not feared that anything in the shape of a business crisis will occur, but simply that the pace must be moderated somewhat.

Contracts are now being placed by the Sterlingworth Railway Supply Company of Philadelphia for the equipment of their new plant at Eddystone, Pa. This matter, it will be recalled, has been held in abeyance for some time, owing to delays in securing clear titles on some of the property purchased for the new plant. We are advised that these matters are now settled and that the work of erecting and equipping the works will be pushed energetically. David Townsend, Consulting Engineer, of 1103 Penn Square Building, Philadelphia, is said to be receiving the bids on the machinery equipment. The plant will consist of a main building 300 x 600 feet; boiler house, 50 x 145 feet, and office building, 50 x 100 feet, three stories. The plant will be devoted to the production of steel cars, the intention being to equip the plant for the production of 30 cars a week. The cars will be built up of angles, channels, beams and plates, this construction being adopted to allow for the easy removal of damaged parts. We are informed that the Eddystone plant will be operated independently under the name of the Sterlingworth Car Company.

The Lake Shore Railroad are buying machine tools and other mechanical equipment to be installed in several of their repair shops. The New York Central interests are also purchasing a fair amount of machinery in small lots for increasing the equipment of their various shops. Purchases are now being made by the Seaboard Air Line Railway in connection with the large list recently issued by Newton Heston, the company's purchasing agent, whose offices are at Portsmouth, Va.

We are advised that plans for rebuilding the shops of the Maine Central Railroad Company at Thompson's Point, Maine, which were recently destroyed by fire, are now being prepared. Large new shops, containing modern equipment, will replace the old ones. A temporary shop has been erected and some new tools have been purchased and installed. In connection with the new shops a power plant of about 200 horse-power will be installed. Theodore L. Dunn, chief engineer, with offices at Portland, Maine, is in charge of the work.

Some time ago the Southern Railway Company sent out a good sized list of machine tools for the proposed additions to their shops at Alexandria, Va., and Atlanta, Ga., and recently the trade were asked to submit revised estimates. We can officially state that definite plans for these improvements have not yet been decided upon.

The Chicago Pneumatic Tool Company, 95 Liberty street, have just closed an order with the Pullman Works of St. Louis for a 1500-foot air compressor, and with the Navy Department for a 1000-foot compound compressor to be installed in the League Island Navy Yard.

On June 9 bids for a large list of machine tools were opened by the Bureau of Supplies and Accounts, Navy Department, Washington. The important items, with list of bidders and amounts, are printed in another column.

The Bureau of Yards and Docks, Washington, D. C., are having specifications printed for 40-ton, 7-ton, 5-ton and 15-ton electric traveling cranes for the Boston Navy Yard. Bids will be asked in about a month.

The following awards have been made for supplies for the Eastern Navy Yards, bids for which were opened May 26:

Class 11, molding machine, \$562; class 12, upright molding machine, \$327.50; class 16, swing cut-off saw, \$71.75; class 17, improved combined rip and crosscut saw, \$225; class 20, planing machine, \$635; class 22, improved tenoner, \$183; class 23, band saw machine, \$171; class 24, hand saw

filing and setting machine, \$63; S. A. Woods Machine Company, South Boston, Mass.

Class 12, automatic knife grinder, \$288, Niles Tool Works Company, Hamilton, Ohio.

Class 13, improved vertical mortiser and borer, \$220; class 19, improved jointing and facing machine or buzz planer, \$200, Bental & Margendant Company, Hamilton, Ohio.

Class 7, 3-motor electric traveling crane, \$2094, Northern Engineering Works, Detroit, Mich.

Class 8, plate scarfing machine, \$4250, Dietrick & Harvey Machine Company, Baltimore, Md.

Class 15, single bolt threader, \$429; class 18, upright drill, \$124; class 21, pattern makers' lathe, \$92; Prentiss Tool & Supply Company, New York.

Class 10, sabining plant, \$7100; Rockwell Engineering Company, New York.

Class 2, 25 horse-power electric motor, \$651; Holtzer-Cabot Electric Company, Brookline, Mass.

Class 3, one 75, one 20 and one 6 horse-power electric motor, \$2834; General Electric Company, Schenectady, N. Y.

Class 5, 30 horse-power iron clad direct current motor, \$510; Westinghouse Electric Mfg. Company, Pittsburgh.

Class 1, one 15 and one 6 horse-power direct current electric motors, \$525.50; Maine Electric Company, Portland, Maine.

Class 4, three 5 and three 2½ horse-power motors, \$834; Maine Electric Company, Portland, Maine.

Class 6, six crucible brass furnaces, \$2250; Edward J. Etting, Philadelphia.

Class 25, saw mill outfit, \$8530; Allis-Chalmers Company, Chicago.

The Buffalo Steam Pump Works, North Tonawanda, N. Y., recently absorbed by the Buffalo Forge Company of Buffalo, capitalized at \$1,000,000, have increased their force 100 men, and are now building an addition to accommodate the entire stationary engine plant, which will be removed to North Tonawanda from Buffalo. This latter plant will require an additional force of 200 men. The Buffalo Forge Company expect to have their entire new plant with its improvements in full operation by fall.

Some new machinery in the way of lathes, planers and shapers will be needed by the Morris Machine Works, Baldwinville, N. Y., for the extension they are building to their plant, but as it is to be mainly used as part of the erecting shop the company have not yet determined to what extent they will put in new tools. The new building will be 84 x 100 feet, with head room of 30 feet, and will be partly traversed by a traveling crane. The present plant covers over 3 acres, and has a frontage on Canal street of over 600 feet.

The Ohio Central Railway Company are erecting a new shop at Bucyrus, Ohio, and their machine shop will be greatly enlarged. They are installing engine lathes, turret lathes, axle lathes and other large tools, and considerable additional machinery will be put in later. The force in the machine shop will be about doubled.

The Fitchburg File Works, Fitchburg, Mass., have bought 2 acres of land at South Fitchburg, on the Boston & Maine Railroad, and have plans completed for a new shop, 300 x 40 feet, one-story high, and a new power house. The new building will a good deal more than double the company's present capacity. They will be in the market for new machinery and entire new equipment for their power plant. The business under the present management is a young one, but the growth has been exceedingly rapid.

George E. Affleck, 107 Liberty street, who represents in this market a wide line of machine tools, is disposing of the entire equipment of the Central Forge Works, Whitestone Landing, L. I. In addition to seven large Hazleton vertical boilers, cranes, blowers, &c., the following tools are still undisposed of: One 108 inch by 30 foot triple geared Bement, Miles & Co. engine lathe; one 60 inch by 45 foot bed triple geared engine lathe, screw cutting; 50 inch by 30 foot New Haven engine lathe, geared in face plate; one 9-inch New Haven slotter; 16-inch Bement, Miles & Co. slotter; 30-inch Bement, Miles & Co. slotter; 20-inch Bement traveling head shaper, 8-foot bed, two tables; vertical boring mill, for boring large cylinders, boring bar 7½ inches diameter, takes work under cross rail extreme 4 feet, Bement, Miles & Co.; large Newton cold sawing machine; large 10-ton steam hammer, with three cranes; 6-inch Curtis & Curtis pipe machine.

H. B. Underwood & Co., general machinists and builders of special tools, 1025 Hamilton street, Philadelphia, Pa., have recently doubled the capacity of their plant, an addition extending 125 feet to Buttonwood street having been erected. They advise us that they have replaced all out of date tools and appliances with modern equipment and have a plant that is as well equipped as any other of its size. Some recent additions of tools include a Niles double tool boring and turning mill, gear shapers, key seaters and a Pond radial drill, new cold saws, lathes and a complete outfit of small tools. This company were established in 1870 by L. B. Flanders and D. W. Pedrick, the latter being still connected with them, and make a specialty of high grade portable cylinder boring bars, portable rotary valve seat planing machines and other special portable tools for railway repair

shops, &c. This department since Mr. Pedrick has taken charge of the mechanical end has more than doubled its former business, and with the newly increased facilities they will be able to take care of a greater range of work than heretofore.

Such machinery as they need at present the Youngstown Wire & Iron Company, Youngstown, Ohio, have secured, but they advise us that a little later they will be in the market for punches and shears, lathes, planers and shapers, bolt cutters and drill presses. The company were recently organized and are operating a plant for ornamental and architectural wire and iron work. It is their intention to erect a new plant next year.

No purchases have been made as yet by the New York Edison Company, 55 Duane street, in connection with the new power stations which they intend building in the Boroughs of Manhattan and Brooklyn. We are authoritatively informed that bids are still being received and that orders will be placed in about two weeks. No information can be had at this time as to the size of the plants to be built, as the specifications which have been sent to the trade call for figures based on the duplication of units. The impression prevailing in the trade is that two plants of about 50,000 horse power each will be determined upon.

Berg & Klink of 26 Cortlandt street are receiving proposals for the water tube boiler plant to be installed at the Syre, Pa., shops of the Lehigh Valley Railroad Company. At present 4000 horse-power will be purchased. The plant is to be laid out, however, for doubling this equipment in the near future.

The Babcock & Wilcox Company, 85 Liberty street, New York, received the order for 6400 horse-power of water tube boilers for the power plant of the St. Louis Exposition. This plant, we understand, is to be installed by the Westinghouse Electric Mfg. Company of Pittsburgh, and is to be the exhibit of that company.

The American Locomotive Company have just placed another order with the Washington Company of 39 Cortlandt street for 2400 horse-power of Franklin water tube boilers. They are to be installed in the company's Schenectady plant and will make a total of 4300 horse-power of this type of boiler in use at this plant.

The Hooven, Owens & Rentschler Co. of 39-41 Cortlandt street have in conjunction with the Rand Drill Company received an order from the Carnegie Natural Gas Company of Pittsburgh for two 1500 horse-power cross compound, condensing Corliss engines. They have also closed with the Cleveland & Akron Bag Company on a 1000 horse-power cross compound, condensing Corliss engine, to be placed in the Boston, Ohio, plant of the latter concern. They have also received an order from D. M. Osborne & Co. of Auburn, N. Y., for a 500 horse-power heavy duty engine to replace the engines now in use at the Auburn plant.

William F. Downs of 74 Cortlandt street, selling agent for the Green Fuel Economizer Company, has just sold an equipment of economizers to the Baltimore Copper Smelting & Rolling Company of Baltimore, Md., to handle 1730 boiler horse-power.

A complete outfit of mining machinery will be purchased by W. S. Douglas of Florence, Ala., for the recently organized Alabama-Virginia Iron Company, who will open large iron mines near Russellville. C. E. Wilson of the latter city, vice-president, informs us that an engineer will soon be employed, and that operations will be started shortly thereafter. The nominal capital of the company is \$61,000. A. J. Phillips of Portsmouth, Va., is president, and J. W. Brown, Jr., of Norfolk is secretary and treasurer.

The American Stoker Company have removed their general offices from New York City to Erie, Pa.

## New York.

NEW YORK, June 17, 1903.

**Pig Iron.**—The market has weakened further under a moderate volume of small transactions for prompt delivery. A somewhat disturbing element has been the forced sale of some small lots of foreign Iron from belated cargoes. Rather than put the Iron into store it has been sacrificed, netting the importer a loss of about \$2 per ton. Since the circumstances were special, and there are no further arrivals due, too much significance should not be attached to these sales. We quote, nominally, for delivery at New York and tidewater: Northern No. 1, \$19.50 to \$20; No. 2 Foundry, \$18.50 to \$19; No. 2 Plain, \$18 to \$18.50. Tennessee and Alabama brands, No. 1, \$19.50 to \$20; No. 2, \$18.75 to \$19.25, and No. 3 Foundry, \$18.25 to \$18.75.

**Steel Rails.**—One of the Eastern trunk lines is in the market for about 10,000 tons for summer delivery, but otherwise the market is quiet. Reports are current of large actual sales for 1904 delivery, but these could hardly have been made in anticipation of the meeting of the Rail makers which is scheduled for the close of this week. The opinion prevails in the trade that the principal question will be one of allotments, and that on the question of prices there will be no change for many reasons. It is expected that when the price is agreed upon a very large tonnage for 1904 will

be placed, to judge from the heavy inquiries in the market. There has been some figuring recently on Canadian business, there being an inquiry in the market for about 20,000 tons for the Northwest. We continue to quote \$28 for Standard Sections, at Eastern mill.

**Cast Iron Pipe.**—The New York Continental Jewell Filtration Company have been awarded a contract which includes 5500 gross tons of large sized Pipe by the City of New York to be used in Brooklyn. They will, of course, sublet the Pipe contract to a Pipe foundry. Another contract, for 10,000 tons, also for Brooklyn, will be placed on Thursday of this week. The Eastern foundries report a continuance of the excellent demand for small lots and quote for carload lots of 6 and 8 inch, \$36.50 per gross ton, at tidewater, and \$35.50 for 12-inch and upward.

**Finished Iron and Steel.**—The local demand for Structural Material is checked by fresh complications which have arisen in the dispute between contractors and the trades unions in the building trades. Building operations are completely suspended until these troubles are adjusted. The Plate trade is also unfavorably affected by the machinists' strike in the local shipyards, which has interfered with the completion of work now in hand and the undertaking of new orders. It had been supposed that after the trouble with riveters and other workmen had been settled the shipyards would be able to proceed with their operations. The shipyards generally are taking little new work pending the adjustment of the new difficulty. Here and there, however, it is understood that some good orders are being secured by the shipbuilders, and as soon as labor matters are adjusted the demand from this source will be much better. Meanwhile the Plate trade languishes and any new business coming up is the subject of sharp competition. Prices are therefore irregular, but it is not understood that any lower rates are being named than the Pittsburgh basis, which makes the minimum delivered price 1.78c. at tidewater in this vicinity. Small lots are still selling on the basis of 1.80c. to 1.90c. at Eastern mill. Bar Iron is dull, with prices weak. We quote, at tidewater, as follows: Beams, Channels and Zees, 1.75c. to 2c.; Angles, 1.75c. to 2c.; Tees, 1.80c. to 2c.; Bulb Angles and Deck Beams, 1.90c. to 2.25c. Sheared Steel Plates, in carload lots, are 1.78c. to 2c. for Tank, 2c. to 2.10c. for Flange, 2.10c. to 2.20c. for Marine and 2.25c. upward for Fire Box. Refined Bars are 1.80c. to 2c.; Soft Steel Bars, 1.75c. to 1.90c.

**Old Material.**—Business is exceedingly quiet. Steel Scrap has felt the effect of lower prices on other Old Material, and has given way to some extent, with less activity. Cast Scrap is neglected, and dealers state that there is practically no market, each transaction being the subject of lengthy negotiation, and the price realized bearing no relation to other transactions. The rolling mills seem to be completely out of the market, and prices on rolling mill stock are therefore wholly nominal. Quotations, which under the circumstances are only approximate, are as follows, per gross ton, New York and vicinity:

|  |                    |
|--|--------------------|
| Old Iron Rails.....                    | \$23.00 to \$23.50 |
| Old Steel Rails, long lengths.....     | 22.00 to 22.25     |
| Old Steel Rails, short pieces.....     | 18.50 to 19.00     |
| Relaying Rails, heavy sections.....    | 27.00 to 28.00     |
| Relaying Rails, lighter sections.....  | 29.00 to 30.00     |
| Old Car Wheels.....                    | 19.50 to 20.00     |
| Old Iron Axles.....                    | 28.00 to 28.50     |
| Old Steel Car Axles.....               | 25.00 to 25.50     |
| Heavy Melting Steel Scrap.....         | 18.50 to 19.00     |
| No. 1 Railroad Wrought Scrap Iron..... | 20.00 to 20.50     |
| Iron Trunk Scrap.....                  | 19.00 to 20.00     |
| Wrought Pipe.....                      | 15.00 to 16.00     |
| Ordinary Light Iron.....               | 11.00 to 12.00     |
| No. 1 Machinery Cast Scrap.....        | 17.00 to 17.50     |
| Stove Plate.....                       | 12.00 to 12.50     |
| Cast Borings.....                      | 8.00 to 8.50       |
| Wrought Turnings.....                  | 15.00 to 15.50     |

## Metal Market.

NEW YORK, June 17, 1903.

**Pig Tin.**—The market has fluctuated, and at the close to-day shows an advance over the prices quoted last week. Business is only moderate, as the country is still well supplied and requirements are somewhat slighter than they have been. At the close to-day the tone was easy, spot being quoted 28.60c. to 28.80c. June is quoted 28.50c. to 28.80c., and later months are entirely nominal. The East is still selling freely, owing to the unsettled conditions prevailing in the Orient as to the future monetary basis. The London market has advanced sharply as compared with last week, the quotation at this writing being £129 5s. for spot and £127 for futures. Arrivals thus far this month amount to 1930 tons, and it is estimated that 3565 tons are afloat.

**Copper.**—While there is no change in the official prices, the market shows still further weakness and is very dull. Lake and Electrolytic are still quoted 14.50c. to 14.75c. and Casting 14c. There are offers in the market at prices ranging from 1/4c. to 1/2c. per lb. lower than the official prices. On the New York Metal Exchange yesterday 250,000 lbs. of Electrolytic were offered at 14 1/4c. without bringing forth any bidders. Consumers are still showing marked reluctance as to purchasing, but this is taken as entirely natural in

view of the fact that the European market is 1c. per lb. lower than the quotations named here. Exports are making a small showing this month, aggregating but 3633 tons thus far, as against 5838 tons exported during the corresponding period of last year. Best Selected declined to £62, which is equal to 13c. in London.

**Pig Lead.**—A reduction of  $\frac{1}{4}$ c. was made to-day by the American Smelting & Refining Company. The ruling figure to-day is 4.12 $\frac{1}{2}$ c. for carload lots and 4.10c. for 50-ton lots. The St. Louis market is easy, and London has declined steadily, closing to-day £11 3s. 9d.

**Spelter.**—The market is quiet, but spot is so firmly held that it is now quoted at 6.25c. here. Shipments from the West are obtainable at 5.75c., and St. Louis quotes 5.55c. to 5.60c. London has suffered another decline, quoting to-day £20 2s. 6d.

**Antimony.**—There has been no change in this metal. Cookson's is quoted at 7 $\frac{1}{2}$ c., Hallett's at 7c., and other brands at 6 $\frac{1}{2}$ c.

**Nickel.**—Is quoted at 40c. to 45c. for large quantities and 50c. to 60c. in small lots.

**Quicksilver.**—A moderate business is reported, the market ruling at \$47.50 for flasks of 76 $\frac{1}{2}$  lbs.

**Tin Plate.**—No change worthy of note has occurred in this market, which remains firm. Shipments on former contracts are heavy and the mills are generally active. Current transactions are of moderate proportions. Prices remain firm. The American Tin Plate Company's quotation continues at \$3.80 per box of 14 x 20, 100 pounds Cokes, f.o.b. mill, which is equivalent to \$3.99, New York.

### Iron and Industrial Stocks.

The general situation in the stock market underwent remarkable changes during the past week. The liquidation which had been proceeding, almost without a check, since January culminated on Wednesday of last week in an outpouring of stocks which threatened complete demoralization, but to the great relief of business interests no failure occurred. On Thursday a complete change of front was made, largely caused by the covering of short sales, and prices rapidly advanced until the losses of a week were almost made up in one day. The improvement was partially held during Friday and Saturday, but on Monday of this week a reaction occurred which drove prices downward, the movement being continued up to Tuesday morning. Another change in sentiment was then brought about by the decision of the anthracite coal miners not to strike but to submit their grievances to the Board of Conciliation. This seems to have been the turning point leading to better feeling, and a strong buying movement set in which affected a sharp recovery in prices, most of the stocks participating in the general improvement. Colorado Fuel & Iron was under exceptionally severe pressure, through the influence of a rumor affecting the credit of the company, which subsequently brought out an official statement that the report was untrue and that the company's finances were in perfectly satisfactory shape. The net result of the week's operations shows an advance at this time of \$1 to \$2 per share on the iron and industrial stocks as compared with the corresponding time last week. The drive against Colorado Fuel caused a decline from 68 $\frac{1}{4}$  realized last Friday to 63 on Tuesday morning of this week, followed by a recovery to 66 in the afternoon. The lowest price touched on the active industrials during the past week were as follows: American Can preferred, 42 $\frac{1}{4}$ ; American Car & Foundry common, 33; American Locomotive common, 20 $\frac{1}{4}$ ; Cambria Steel, 22; Crucible Steel common, 14 $\frac{1}{2}$ ; Crucible Steel preferred, 80 $\frac{1}{2}$ ; Dominion Iron & Steel, 12 $\frac{1}{4}$ ; Pressed Steel common, 51 $\frac{1}{4}$ ; Republic common, 13 $\frac{1}{2}$ ; Republic preferred, 73 $\frac{3}{8}$ ; Sloss-Sheffield common, 39 $\frac{1}{4}$ ; Tennessee Coal, 50; United States Steel common, 29 $\frac{1}{2}$ ; United States Steel preferred, 79 $\frac{1}{4}$ ; United States Steel new 5's, 84 $\frac{1}{2}$ . United States Shipbuilding Company's 5 per cent. bonds sold down to 20 $\frac{1}{2}$ , against the last previous sale at 42.

**Sloss-Sheffield Steel & Iron Company.**—The detailed financial statement of the Sloss-Sheffield Steel & Iron Company for the six months ended May 31 shows the following changes:

|  | 1903.       | 1902.     | Increase. |
|--|-------------|-----------|-----------|
| Profit from operation.....               | \$1,322,333 | \$587,240 | \$735,093 |
| Depreciation, repairs and renewals ..... | 81,741      | 69,000    | 12,741    |
| Net earnings.....                        | \$1,240,592 | \$518,240 | \$722,352 |
| Interest and taxes.....                  | 120,000     | 120,000   | .....     |
| Balance .....                            | \$1,120,592 | \$398,240 | \$722,352 |
| Dividend preferred stock.....            | 228,000     | 228,000   | .....     |
| Surplus .....                            | \$892,592   | \$170,240 | \$722,352 |

A block of the \$800,000 general mortgage 6 per cent. gold bonds of the Wellman-Seaver-Morgan Company of Cleveland are offered for sale. These bonds are due May 1, 1913, but are subject to call for payment at the option of the company on any interest day, from May 1, 1908, at 105. The company's capital stock is \$3,000,000, of which \$1,000,000 is 7 per cent. cumulative. Cleveland Finance says: "The

bonds are a lien on all the property of the company, subject to \$400,000 first mortgage 6 per cent. bonds of the Wellman-Seaver-Morgan Company and \$100,000 first mortgage bonds of the Webster, Camp & Lane Company. These bonds are redeemable in 1904 and 1905, and it is proposed to retire them as soon as they can be obtained. Profits for the year 1903, based on signed contracts, are estimated at \$1,300,000."

J. F. Pierson, Jr., & Co., 11 Wall street, make the following announcement: "A practical proposition has been made to acquire a majority of the stock of the Compressed Air Company upon condition that the minority stockholders be allowed the privilege of participating in the plan upon the same terms as the majority. The plan provides for sufficient funds to pay the debts of the Compressed Air Company; to improve the Rome Locomotive & Machine Company's works, leaving a cash balance, thus placing the company on a sound and prosperous footing. It will also provide new fields of operation with the principal railway and traction companies in the United States and Canada."

**Dividends.**—International Steam Pump Company have declared a dividend of 4 per cent. on the common stock, payable in quarterly installments of 1 per cent. on the first day of July and October, 1903, and January and April, 1904, and a dividend of 6 per cent. on the preferred stock, payable in quarterly installments of 1 $\frac{1}{2}$  per cent. on the first days of August and November, 1903, and February and May, 1904. For the first payment on common stock transfer books will close June 19 and reopen July 2.

The Garvin Machine Company of New York have declared the ninth semiannual dividend of 3 $\frac{1}{2}$  per cent. on the preferred stock, payable July 1. Books close June 15 and reopen July 6.

Empire Steel & Iron Company have declared a semi-annual dividend of 2 per cent. on the preferred stock, payable July 1.

Vulcan Detinning Company have declared the regular quarterly dividend of 1 $\frac{1}{4}$  per cent. on the preferred and 1 per cent. on the common stock, payable July 20. Books close July 9 and reopen July 21.

### Trade Publications.

**Triplex Electric Pumps.**—The Aldrich vertical triplex electric pump, built by the Allentown Rolling Mills, Allentown, Pa., is described in a recent folder. This machine consists of a slow speed motor directly connected through single reduction gears to a triplex pump, the whole making a self contained machine. These pumps are built in capacities from 50 to 2240 gallons per minute.

**Machine Tools.**—A catalogue by the Garvin Machine Company of New York describes the wide line of machine tools built by them. This consists, in part, of single and multiple spindle drills, drill presses, radial drills, shapers, lathes, planers, &c.

**Train Lighting with De Laval Turbines.**—A bulletin by the De Laval Steam Turbine Company, 74 Cortlandt street, New York, describes the method of lighting trains with their turbines. In the case of a few trains on the Prussian railroads the turbine and direct connected dynamo are mounted on top of the locomotive boiler. The two main conductors are carried through the whole train, from car to car, by means of plug connections. In each car a battery composed of 32 cells is switched in parallel with the mains to the dynamo. The circuit feeding the lamps also connected to the same mains. During the run the dynamo generates a current of 60 volts, which can be raised to 90 volts during the charging period; the batteries can be discharged at a voltage of from 64 to 58 volts, while the lamps are fed with a current of 48 volts. The system is proportioned according to the number of lamps required in the car.

The Penn Engineering Company of 312 Cherry street, Philadelphia, describe their radiator air valves in a pamphlet. Their automatic valves have a nondrip extension, and the float valves have a ball joint, both of which are improvements found only in these valves.

The National Steel Foundry Company of New Haven, Conn., have prepared, in pamphlet form, a brief history and description of the art of steel casting. The plant of this company has a capacity of 30 tons of open hearth steel castings.

**La Belle Iron Works.**—The La Belle Iron Works, Steubenville, Ohio, expect to start up their large pipe mill not later than July 15 next. This mill is equipped to turn out line or merchant pipe 8, 9, 10 and 12 inches in diameter. The La Belle Iron Works are now operating six 50-ton open hearth steel furnaces and expect to start up three more open hearth furnaces of the same capacity about August 15 next. The plant at present embraces one blast furnace in operation making about 500 tons a day, open hearth steel plant, pipe and skelp mills, all at Steubenville, Ohio, and a cut nail factory at Wheeling, W. Va. The company are building a second blast furnace, to be a duplicate of the present stack, and which is expected to be ready for operation about December 1 next.

## Labor News.

### The Situation at Bridgeport.

BRIDGEPORT, CONN., June 16, 1903.—The machinists of Bridgeport have made demand upon their employers for a nine-hour day, with ten hours' pay. With two exceptions the demand was not granted, some manufacturers paying no attention to the action of their men, others posting notices stating that it would be impossible to make a nine hours' day, as the season's contracts had already been placed based on existing wages. The machinists claim that their action is not as a union, but as individuals; but the Machinists' Union is certainly back of the movement.

As a result of the refusal to grant the demand, the machinists employed in the Yost factory of the Union Typewriter Company and at the Pacific Iron Works went on strike. About 30 machinists are out at the Yost factory and about 25 at the Pacific Iron Works. A few machinists employed in several other shops also struck, because they were given work of the Yost Company and the Pacific Works. However, only a few more than 60 journeymen are on strike. With them are a number of helpers and handymen.

The strike at the Yost Company was precipitated, it is understood, by the discharge of a shop committee sent to wait upon the superintendent. The demand for eight hours had been made and refused. The men then appointed a committee of three to again present their demand. One of the three was ill, but the other two waited upon the superintendent and were discharged. The next morning the other men declined to begin work, and although it was agreed by the management that the committee would be reinstated, the machinists concluded to go out unless the nine-hour day was granted. It was not granted.

At the Pacific Works the machinists were impatient to strike. The recent death of the proprietor, Philo H. Skidmore, had left the company without an actual business head. The demand by the men was made a few days before a son of Mr. Skidmore came of age, and would be in a position to legally answer the demand. But the men would not wait even those few days.

No other demand is coupled with that for nine hours without reduction of pay. The machinists are concentrating their energies on this single issue.

The two exceptions among the manufacturers are the Smith & Egge Mfg. Company and the American Graphophone Company, who recently granted all their employees a nine-hour day, which, of course, included the machinists.

The manufacturers affected are determined to fight out the issue. They do not propose to give in in the face of a display of force by their men. They are acting in concert through the Bridgeport Manufacturers' Association, who comprise in their membership practically all of the large manufacturers of the city, as well as most of the smaller concerns.

It is claimed by the union that their membership is upward of 900, but the general belief is that 600 is nearer the correct figure, not including helpers and handymen. Some of these latter are also on strike, the 60 strikers referred to above being journeymen. Both the Yost and the Pacific Works are carefully picketed.

The union is following the method of previous strikes in other cities by calling out the men in a few shops, the agreement among the members being that those who are working shall contribute to the support of the strikers. The union threatens to call out the men of other shops later on, the popular impression being that two shops at a time will be taken. This, however, is on the supposition that harmony shall continue to prevail in the union, and already there is some dissension. The members who are working are not all living up to their agreement to pay a weekly assessment of \$1, and some of the strikers are beginning to see that they are getting the short end of the bargain. They reason that it is not a fair deal that they receive only \$4 or \$5 a week, while their fellow members of the union still have their full wages, minus only the \$1 assessment, and not even

minus that amount in some cases. The strikers claim that they are idle not because they do not wish to work, but for the sake of procuring a shorter day's work, in which, if they should be successful, all the members would probably share.

The manufacturers are resolute. They believe that to lose this fight would be a very serious matter, and are determined that they will shut up their shops rather than surrender under fire.

The Pacific Iron Works have two other strikes in their shops. The boiler makers went out Saturday, because their demand for a nine-hour day, with ten hours' pay, and for time and one-half pay for overtime, was not granted. Twenty-four boiler makers are out in this shop, in addition the blacksmiths went out on the same issue.

The same demand was made by the boiler makers employed by the Bridgeport Boiler Works. No attention was paid to the demand, and 16 out of 40 boiler makers struck. The Bridgeport Boiler Works have succeeded in filling the places of the strikers, and state that none of the strikers will be given employment again.

The differences between the foundrymen and the molders have been adjusted. While a nine-hour day was not formally granted in most of the foundries, an adjustment has been effected so that uniform conditions now exist, with the exception of the big Bridgeport Malleable Iron Foundry, where a ten-hour schedule is in force, and where the matter of a change has not been taken up. The conditions in this foundry are so entirely different from those in other foundries that it is taken as a matter of course that it is not included in the new adjustment.

The molders are satisfied with the adjustment because it gives them practically a nine-hour day, as the pour off is at 4.30 o'clock instead of the nominal 5 o'clock. But as a matter of fact they have not for years been working more than nine hours on the average, it is said, because the average time of the pour off was before 5 o'clock.

It has come out as a result of the strike at the Pacific Iron Works that it has been practically decided to incorporate the business with the purpose of continuing it. It had been feared in Bridgeport that the plant, employing normally 150 hands, would be abandoned.

### Miscellaneous Notes.

The Andrew Terry Company's foundries in Terryville, Conn., are again in operation, although with a somewhat reduced force, after having been closed for about two weeks because of a strike of its molders. Most of the men were led into the trouble through ignorance and the influence of labor agitators from outside the place, and returned to work of their own volition and upon the same conditions which prevailed before they went out. The whole affair has been managed very cautiously but firmly by the officials of the company, and the outcome is exceedingly gratifying. Their stand in the matter has been cordially indorsed by their clients as well as the law abiding public.

The Gibson Spring Company, Chicago, have made a settlement with the allied metal mechanics whereby the employees are granted a nine-hour day and a 15 per cent. increase in wages. Nearly 200 men are affected.

The foundrymen and molders of Fitchburg, Mass., have come to an agreement as to wages. The employers have granted an advance of 12½ cents a day, making the minimum wage \$2.75. The foundries affected were those of the Putnam Machine Company, the L. H. Goodnow Foundry Company and M. J. Perault.

The D. M. Dillon Boiler Works of Fitchburg, Mass., have settled their troubles with their boiler makers, but without granting a general advance in wages. The older men were given an advance based on their length of service, and some of the more recent additions to the payroll received no advance at all. However, the men appear to be satisfied with the arrangement.

The molders employed in all the foundries at Springfield, Mass., went on strike Tuesday, June 9, on the nine-hour issue. About 125 men went out in the foundries of the Bausch Machine Tool Company, Confectioners' Ma-

chinery & Mfg. Company, Springfield Foundry Company and the Davitt Foundry. No settlement has been effected. The original demand of the Molders' Union did not include a nine-hour day, but was otherwise sweeping. It was for a minimum wage of \$3 a day, which meant an increase of 25 cents; the abolition of all piece work, a minimum wage of \$2.50 for core makers, whom the molders have taken into their union this year; time and one-half pay for overtime and double time for holiday or Sunday work, and the union apprentice ratio of eight to one. A conference between the employers and a committee of the union followed this demand. The foundrymen refused to grant it. The union thereupon withdrew this demand and presented another in its place, for a nine-hour day at the old minimum wage of \$2.75 and a minimum wage of \$2.50 for the core makers, for whom no uniform wage is in vogue in Springfield. The strike followed hard on the demand. It is well understood that the action of the local union in ordering out its members has not been authorized by the national organization. In this instance, as in many others, conservative members of the union have kept out of the meetings, which acted on the labor question, the result being that a comparatively small per cent. of the members, and those the most radical, dictated a policy which many molders now on strike deeply regret. However, it is expected in Springfield that the strike will be of short duration.

#### The St. Louis Settlement.

Settlements have been effected which have terminated most of the labor troubles in St. Louis. Agreements were entered into by the St. Louis Metal Trades' Association and the machinists and apprentices, allied metal mechanics and blacksmiths in their employ. The unions representing the pattern makers and brass workers were offered the same terms of settlement, but declined to accept them. Following are the shop rules to govern members of the St. Louis Metal Trades Association in their relations with the machinists and machinist apprentices in their employ from May 20, 1903, to May 20, 1904:

1. Fifty-four hours shall constitute a week's work. These hours shall be worked between 7 a.m. and 6 p.m., and a schedule thereof posted in the shops. All work outside of such schedule is to be paid for as overtime.

Night gangs shall also work 54 hours per week on the regular night schedule posted in the shops, and any overtime worked outside of the schedule hours shall be paid for as overtime.

2. All overtime up to 12 o'clock midnight shall be paid for at the rate of time and one-half time, and that after 12 o'clock and the following holidays: New Year's Day, Fourth of July, Memorial Day, Labor Day, Thanksgiving Day and Christmas Day and Sundays shall be paid for at the rate of not less than double time.

In cases of emergency, where shop machinery breaks or runs down, and it is absolutely necessary to repair the same, so that the factory can run on the following day, or on Monday, this work shall be paid for at the rate of time and one-half time. The repairs above referred to apply only to the machinery of the employer. The foregoing rates not to interfere in any way with existing condition; that is, where a higher rate than the above is paid now no change will take place. Such rates for overtime shall not apply to men regularly employed on night gangs.

3. Apprentices shall be formally indentured under the official contract mutually adopted for a period of four years to learn the machinists' trade, and at the time of making said indenture shall be between the ages of 16 and 21 years. There may be one apprentice for the shop and in addition not more than one apprentice for every five machinists.

No apprentice shall, except for just cause, leave the service of his employer until he has served his full term, when he shall receive an apprenticeship certificate, and if competent receive machinists' wages.

4. There shall be no arbitrary limitation of the amount of work a workman or machine may turn out in a day. We will countenance no condition of wage which is not fair and which does not insure a good wage to a good workman.

5. We will not interfere with the proper functions of labor organizations, and will permit no interference with the proper management of our business.

6. There shall be no discrimination in employment on account of membership or nonmembership in any labor organization, and there shall be no discrimination against or interference with any workman by his fellow employees because of his or their membership or nonmembership in any labor organization while in the discharge of his duties.

7. Any workman may leave our employment whenever he sees fit, and it is the privilege of the employer to discharge any workman whenever he sees fit. But this rule shall in no case permit collective action, contrary to the provision of Rule 8.

8. We will receive committees of our machinists to discuss grievances and will not discriminate against any machinist on such committee.

In case of misunderstanding we will meet a committee of our machinists and endeavor to adjust the matter on a fair and equitable basis, and in case of inability to reach a satisfactory conclusion we will submit the question to conciliation of six persons, three chosen by the employer and three by the machinists, who shall within 48 hours attempt to adjust the matter, and in case of inability to reach a satisfactory conclusion this board may agree upon a final board of conciliation or arbitration, whose decision shall be final and binding on both employer and machinists. Disapproving absolutely of strikes and lockouts, there shall be no cessation of work pending conciliation or arbitration, and we will not arbitrate any question with men on

strike or an employer who has locked out his machinists without complying with Rule 8.

9. There shall be an increase of 7½ per cent. in the hourly rate paid machinists.

10. Either party to this agreement desiring to amend or cancel it shall give notice to the other party in writing on or before April 20, 1904.

An agreement embodying precisely the same features as the above, including the 7½ per cent. increase in wages but with the exception of the apprenticeship clauses, was entered into by the St. Louis Metal Trades Association and the Allied Metal Mechanics. Following are the shop rules to govern members of the St. Louis Metal Trades Association in their relation with the blacksmiths in their employ:

1. To be considered a blacksmith, one shall be able to take any piece of work pertaining to his class, with the drawings or blue prints, and prosecute the work to a successful completion within a reasonable time. He shall also have served a regular apprenticeship or have worked at the trade four years.

It is understood that the question of competency is to be determined by the employers. Since the employers are responsible for the work turned out by their workmen, they shall therefore have full discretion to designate the men they consider competent to perform the work and to determine the conditions under which it shall be prosecuted.

This last paragraph does not in any way abridge or destroy the right of appeal from any apparent or alleged unjust decision rendered by an employer, in conformity with the powers vested in him by this paragraph.

2. Fifty-four hours shall constitute a week's work. These hours shall be worked between 7 a.m. and 6 p.m., and a schedule thereof posted in the shops. All work outside of such schedule is to be paid for as overtime.

Night gangs shall also work 54 hours per week on the regular night schedule posted in the shop, and any overtime worked outside of the schedule hours shall be paid for as overtime.

NOTE.—This rule is in no way to interfere with shops running under agreements providing a different schedule of hours.

3. All overtime up to 12 o'clock midnight shall be paid for at the rate of time and one-half time, and that after 12 o'clock, and the following holidays, New Year's Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas and Sundays, shall be paid for at the rate of no less than double time.

In cases of emergencies, where shop machinery breaks or runs down, and it is absolutely necessary to repair the same so that the factory can run the following day, or on Monday, this work shall be paid for at the rate of time and one-half time. The repairs above referred to apply only to the machinery of the employer. The foregoing rates not to interfere in any way with existing conditions; that is, where a different rate than the above is paid now, no change will take place. Such rates for overtime shall not apply to men regularly employed on night gangs.

4. A helper will not be permitted to do blacksmith work at a fire except under the following conditions: If placed at a fire for not more than a week, in case of emergency, he shall receive his regular wage rate. If placed at the fire for a period longer than one week, his wages shall be increased 25 cents per day at once, and he shall be granted a further increase of 25 cents per day at the end of each six months thereafter, until he shall have attained the rate of wages previously paid at the fire.

No apprentice shall, except for just cause, leave the service of his employer until he has served his full term, when he shall receive an apprenticeship certificate.

5. There shall be a fair day's wage, and no limitation of production.

6. We disclaim any wish to interfere with the proper functions of labor organizations, but will permit no interference with the proper management of our business.

7. Workmen shall belong or not belong to trades union, as they see fit. We shall employ union or nonunion men at our discretion.

8. Any workman may leave our employment whenever he sees fit, and it is the privilege of the employer to discharge any workman when he sees fit. But this rule shall in no case permit collective action, contrary to the provisions of Rule 9.

9. We will receive committees of our employees to discuss grievances, and will not discriminate against any employee on such committee.

In case of misunderstanding, we will meet our employees either individually or collectively, and endeavor to adjust the matter on a fair and equitable basis, and in case of inability to reach a satisfactory conclusion, we will submit the question to arbitration of six persons, three chosen by the employees and three by the employer, who shall, as soon as possible, attempt to adjust the matter, and in case of inability to reach a satisfactory conclusion, this board may agree upon a final board of arbitration, whose decision shall be final and binding on both employer and employee.

Disapproving absolutely of strikes and lockouts, there shall be no cessation of work pending arbitration, and we will not arbitrate any question with men on strike.

10. There shall be an increase of 7½ per cent. in the hourly rates paid blacksmiths.

11. These rules shall govern for one year from date hereof and continue thereafter until amended or canceled after 30 days' written notice.

On May 20 about 4000 men, including machinists, blacksmiths, metal polishers, pattern makers, &c., went on strike in St. Louis because their demands upon the employers were not met. The men held out for a 10 per cent. advance in wages. The employers refused to accede, but offered to compromise on a 6 per cent. advance. This the men declined. It is generally believed that the pattern makers and brass workers will finally determine to come back on the basis of settlement given above.

James H. Peck, proprietor of the Peck Rolling Mills, Limited, Montreal, Canada, died June 9 at his home, in that city, aged 52 years.

# HARDWARE.

**T**HOUGHFUL students of trade tendencies cannot but be on the lookout for indications as to the extent to which the jobbing trade are drifting toward manufacturing. Our readers will recall many jobbing houses who are at the same time openly in the field as manufacturers. In addition to these there are others who are virtually in control of a number of small manufacturing concerns whose entire output they market. Still others are closely allied by identity of financial interest with mills or factories. In this connection the recent change of name in well-known Hardware jobbing houses is at least suggestive. The question comes up whether the jobbing house of the future is, through consolidation or gradual development, to be a gigantic corporation which shall have exceedingly wide relations to the trade as distributors of products greatly varied in character, many of which are of their own manufacture or made under their control or in their interest. The apprehension of such a complication and increase in competition was an influence which made manufacturers look askance on the great consolidation of jobbing interests, the announcement of which, so quickly followed by its utter collapse, was one of the startling and withal pathetic incidents in the recent history of the trade.

The incident mentioned in our last issue, in which a manufacturer, jobber, retailer and consumer were concerned in negotiations relating to the purchase of a church bell, has called out a number of communications. It is evidently regarded by our readers as illustrating the prevailing disturbed condition of things so far as the distribution of manufactured products is concerned, the breaking away from old methods and the practical problem as to the course which the progressive and up to date merchant or manufacturer is to pursue. We shall not attempt to summarize the opinions expressed on the various questions involved in the case under consideration. On one point, however, most of our readers agree—that the retail merchant was to blame in not going direct to the manufacturer for the purchase of an article which was not regularly carried in stock by the jobber; that he, if well posted, should have done this in the first instance, but that he was doubly and inexcusably negligent in not going to the manufacturer when he found that if he purchased the bell through the jobber he could not meet the price of the catalogue house. The incident regarded in this light is to be taken as an illustration of the lack on the part of many retail merchants of the enterprise and push which are essential to a successful business career in these days of such vigorous competition and of so much boldness and originality in trade, that those who are content to trudge along in the old paths will find that they lead to a destination very remote from the goal of a legitimate ambition. Whatever measure of blame belongs to the retail merchant for his deficiency of enterprise and energy in this transaction does not, of course, exonerate the manufacturer or the jobber if they were at fault in the premises. To these phases of the question we may have occasion to refer again; we now emphasize the retailer's shortcoming because the prime duty of the retail trade is to recognize that the lack of enterprise and of a wide awake spirit in the conduct of business is the prolific source of the evils under which they are suffering. In this view of the case their first duty is to revise their own methods rather than criticise, no matter how

justly, the methods of the manufacturer, the jobber or even the catalogue house.

## Condition of Trade.

The six months of 1903 about to close certainly afford, as a whole, a very satisfactory retrospect, so far as the general volume of business and the prices which have prevailed are concerned. With scarcely an exception manufacturers have been working to their full capacity, but have felt the necessity for increasing their facilities, wherever this has been feasible, and even then many of them have been struggling with back orders from which they are only now succeeding in freeing themselves. The prosperity which has thus been enjoyed by the manufacturers has been participated in in corresponding measure by the distributors, both wholesale and retail, throughout the country, with whom, except in adverse circumstances, the half year has been one which gave excellent opportunities for profitable business. The time of year is now upon the trade when a relaxing pressure is to be expected, and there are already indications of the near approach of the vacation season. As usual, there has been during the present month a falling off in orders received by manufacturers, and the disposition not to purchase extensively has been made more decided by some influences, which tend to interrupt and check in some little measure the exceedingly confident feeling which has for so long a time prevailed. Among these untoward influences are the disturbances of the even course of nature by drought and flood, the unsettling of things in the industrial and financial world by strikes, the shrinkage in the values of securities and the decline in Iron. The powers of nature have fortunately resumed their wonted beneficent sway, and the prospects are excellent for large harvests, which should give a sound basis for continued prosperity. It is to be hoped that the course of things where human agency enters the case may have an equally fortunate outcome, with labor contented and distrust removed, even with securities and raw material on a lower but sounder level. The desirability of a return to more normal prices for merchandise is generally conceded, and is undoubtedly essential to the continuance of prosperous conditions. While there is a good deal of speculation as to what the future of trade may be and a canvassing of the question as to whether we are to prepare for a reaction from the splendid conditions which the country has so long enjoyed, the production and consumption of goods goes on apace and general well being continues.

### Chicago.

(By Telegraph.)

There has been a decided increase in the number of contracts placed by manufacturers for Shafting, Hangers, Pulleys and other power transmission supplies; also for Wire Fencing, Fencing Wire, Spring Wire, Mattress Wire, Weaving Wire and similar products, but the mills have booked but little new business from the jobbing interests for Nails, Plain and Barb Wire. Specifications on old commitments also are pretty well in, and a quiet time, as usual at this season, will probably be experienced in the next month or two. The merchant trade in heavy lines in Hardware has shown further improvement, although still much below the average of a year ago. The demand for Bars, Spikes, Bolts, Rivets, Plates, Sheets and a few other similar goods have been quite satisfactory, but Nuts have been less active and Chain has been exceptionally dull and weak. Tapped Nuts and Washers are still very scarce and wanted. Tin Plate is also very scarce, but with a more ample supply of Tin Plate Bars

at lower prices the outlook is more favorable for an ample supply of Plates. Manufacturers' agents for Shelf Hardware, such as Cupboard Locks, Sash Fasteners, Awning Pulleys and others goods of the same general character, report the market quiet, the disposition being to purchase less freely for fall delivery than usual at this time of the year. Builders' Hardware has been quiet, nothing definite being heard from the several large contracts for buildings previously referred to and the smaller contracts offered being fewer and less desirable. Jobbers report that while there is lack of animation in trade, there is a fair volume of business in the aggregate and that orders are well distributed over staple lines and specialties. The bulk of orders for fall shipment have been placed, and as far as this business is concerned we are now between the seasons, when a lull is usually expected. However, one or two jobbers report the receipt of fair sized orders for Axes and Scoops, and occasional additional orders are being received for Carpenters' Tools. Most of the business coming forward to jobbers at the moment is for quick shipment and for the summer line of goods. The retail trade is moderately active without special new features. Orders from the flooded district tributary to this market are still few and far between. Much interest is naturally felt in the crop prospects. With the lower condition of winter wheat and the decrease in the acreage of corn planted, the prospect for record breaking yields has been killed, as far as winter wheat and corn are concerned; but the indicated yield of spring wheat is for the largest crop ever harvested, notwithstanding a decreased acreage. Under the circumstances the outlook is for a continuance of general prosperity. Dealers in Wagon Material note that they have practically *carte blanche* orders for Spokes, Rims, Hubs and similar material, which is very scarce, as a large portion of the territory which is usually rich in shipments of these articles has been flooded for a considerable period, cutting off supplies.

#### St. Louis.

(By Telegraph.)

Reports from the Hardware jobbing district all point to a very large volume of business. The flood conditions and other matters which have figured in this market seem now to have been almost entirely lost sight of and shipments are moving forward as usual. In connection with the large volume of orders for all summer lines of specialties some activity is to be noted in the demand for fall goods. Reports from individual salesmen concerning crop prospects in certain localities are generally of an encouraging nature and strengthen the trade's reliance in a very large fall business.

#### Portland, Oregon

CORBETT, FAILING & ROBERTSON.—Trade is good and June bids fair to end the first half of the year with a skyrocket finish. Two things tend to bring about the above conditions. The interior buyer that watches the market knows of the big drop in the price of pig iron and fears that ultimately it will have its effect on finished products and prefers jobbers to carry his stock. In addition is the uncertainty of the crop outlook. We have had a long spell of dry weather unusual to the Pacific Northwest at this season, and now on top of that very hot weather prevails.

The retailers who have heretofore placed a large part of their orders in the East now see it to their advantage to order often and in smaller quantities from nearest jobbing points. That means grist to our mills.

There are others, however, who are preparing to share with us in the good things that the gods have dished up so liberally in this section. Something over a year ago the Pacific Hardware & Steel Company of San Francisco bought the Portland Rolling Mills. Last month they bought 1½ acres of ground in the vicinity of the rolling mills, where they propose building a warehouse to carry goods to supply their trade in Oregon, Washington and Idaho. This will result probably in expanding to a full stock later, as a branch house. Marshall-Wells Hardware Company of Duluth, over a year ago opened a warehouse here, as the Pacific Hardware & Steel Company are now doing, and this year bought a lot, 75 x 200 feet, in the

business center, where they are now erecting a five-story building, the first story of stone and the balance of brick. Here they will carry all the lines they handle and manufacture in Duluth. Waterhouse & Lester of San Francisco, dealing in blacksmiths' and wagon makers' supplies, are opening a branch here in a new seven-story building that was leased to them and others before construction commenced. Mr. Kirk of Farwell, Osmun, Kirk & Co. of St. Paul was here about 60 days ago inquiring about location and price of real estate, but to date nothing definite has developed in their case.

Water and rail converging at this point, allowing the assembling of goods from all parts of the world and unequaled facilities for distribution through as fair a country as God ever made, where terminates the Southern Pacific, Union Pacific, Northern Pacific and Great Northern, has induced the far sighted management of these firms to cast their lot and pay taxes with us. Thank God for the latter and may He make the competition as light as possible consistent with the circumstances!

#### Cleveland.

THE W. BINGHAM COMPANY.—There seems to be no let up in the volume of business that is coming to this market for general lines of Hardware. The trade seem to realize fully that Cleveland is a good market to buy from on account of the large stocks of goods and the ability of the jobber to make prompt shipments.

There is considerable let up in the railroad congestion at different points, so that we are able to give our customers very good and reasonable service, and we expect it to grow better every day. The railroad companies report that the terminal and transfer points are being rapidly cleared up, and promise better service from now on, and with this accomplished it will largely benefit our customers and us.

There is a very active demand just at this time for Wire Cloth and Poultry Netting, but stocks are light all over the country, and this necessitates exchanging sizes and kinds with our neighbors to accommodate customers, which we are doing quite nicely.

There has been an extremely large trade in Lawn Mowers this year on account of the recent wet weather, which has made the lawn grass grow very rapidly. People have been educated in the last few years to keep their lawns in good order, and it has largely increased the sale of the hand and horse Lawn Mowers.

Orders that are coming in by mail direct from customers and through salesmen are quite noticeable at this time of the year for their length, quantity and good assortments, showing that the retail dealers are enjoying good trade in almost all lines of Shelf Hardware.

Throughout the country there seems to be a great deal of building going on and much more in anticipation. Labor troubles seem to have affected the larger cities mostly. It looks very much as though the labor troubles and strikes will soon be things of the past and that the whole country will settle down to good solid work.

We extend our sympathy to those in the Mississippi Valley who are suffering so much from the recent floods, and trust that the waters will soon subside and that peace, happiness and prosperous business will come to them.

In this immediate vicinity the wholesale and retail dealers in all lines of trade report that they are enjoying a fine business. Collections are extremely satisfactory and we expect to close the first six months' business this year with a larger showing than heretofore.

#### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Business in this section of the country, as far as we are able to see, continues to be most satisfactory. The farmers, general store keepers and retail merchants of the South are all enjoying an unusual amount of prosperity. Crop prospects are fairly good, and while the crops may not be as large as in some years, commodities are going to bring a good price and will overbalance any shortage.

The mining industries of the South are developing more rapidly every day; new coal mines are being opened all the time; iron furnaces are being started and the

phosphate mines in this immediate section are in full blast. The shipments of phosphate at present are larger than they have been for the past two years, and the prices being obtained for the phosphate rock are considerably higher. The manufacturing industries of the South seem to be flourishing. All manufacturing plants and other branches of trade seem to have as much as they can do.

Nashville Hardware jobbers report the trade for the month of June unusually good, showing quite an increase over June of last year. There continues a large demand for goods and prices are being well maintained.

#### Louisville.

W. B. BELKNAP & Co.—We have to report a steady, reasonably active market—in fact, more active than is usual at this season of the year. Buying has undoubtedly been light for some months past, so that the actual needs of the business are making themselves felt in sorting up orders, which flow in in pretty full streams every morning of the business week.

No concessions are being offered, as far as we can learn, and as the manufacturers profess to be well filled up with orders for some time to come, there is no special reason that there should be any cutting unless demand falls far below what is apparent.

The recent rains have greatly decreased the damage done by early drought in this part of the country. They have not been so excessive here as they have been elsewhere. With the favorable weather now, we look forward to most excellent crops, including hay, wheat and the later fruits.

#### Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade in wholesale circles has, up to this date, kept up quite as well as one ought to expect, especially considering the conditions that prevail over the entire country. Locally our season has been one of radical weather changes, unusually cold weather being followed by a few exceedingly hot days, then a sudden change to unseasonable cold, and from a dry season of considerable length to recent cold rains. This would naturally have its effect upon trade, but what has retarded it more than we otherwise would expect has been the unrest of the employed in various vocations of mechanical and manufacturing industries.

The stupendous strike in the coal regions, which lasted so many months, had an effect from which the entire country suffered, both in the high price of coal and in the scarcity of the same; and it is the opinion of manufacturers as well as building contractors who are now suffering from strikes that this strike in the coal regions was largely the cause of the extended unrest which smoldered for a while and then developed in full force through the organizations of the various builders, both in New York City and Philadelphia, and caused suspension of building operations. No sooner were there signs of this trouble becoming settled than the textile workers of our city became uneasy, which resulted in a strike in which 100,000 men and women, including boys and girls of 15 years or under, suddenly refused to return to work.

The recent estimate given out of 300,000 persons on a strike throughout the country, located as we are, we should consider quite an underestimate. The 600 manufacturers located in our own city report 100,000 on strike; in Pittsburgh there are 70,000 locked out, which might be practically called a strike, because it would have ended in that ultimately. There are also quite a number of local strikes through our State, which with the others would foot up to at least two-thirds of the above estimate for the entire country. The unrest has extended through the great Northwest, but the territory west of the Mississippi River, including Kansas, Iowa, Nebraska and Missouri, has suffered from flood, fires, tornadoes and loss of life, in which the whole country has sympathized and which no human effort could have prevented. Then came loss of life and property in the South from tornadoes, storms and floods.

All these things combined have caused great uneasiness in the money market and extraordinary declines in stocks. It is estimated that 25 well-known stocks have declined over \$500,000,000 in value, nor does this cover many stocks, which have declined 66 2-3 per cent. There

is a bright side, however, to the near future in the shape of a larger wheat crop throughout the country than last year, which was an enormous one, and while the corn crop may not be equal to last year's, it is estimated it will be very large, and the oat crop also will nearly hold its own. Our country is helped out wonderfully by the expenditure of money in railroad developments. So taking it altogether, when matters become settled again and considering the recuperative powers of our country, while persons in financial circles are very uneasy, persons in trade hope for a continuation of good business during the year.

Changes in prices are few, nor is it likely that any radical change will take place July 1.

Trade continues fair in our own city.

### NOTES ON PRICES.

**Wire Nails.**—The largest part of the Nails being shipped from the mills are on contract orders, specifications on which are coming in quite freely. Current demand covered by new orders is only fair. Prices are considered low by some in the trade and as not particularly remunerative to mills who do not manufacture their own raw material. Under these conditions the market remains firm. The view is held that Nails will not be lower in price, at least this year, and that large buyers are recognizing this. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

|  |        |
|--|--------|
| Jobbers, carload lots.....             | \$2.00 |
| Retailers, carload lots.....           | 2.05   |
| Retailers, less than carload lots..... | 2.15   |

*New York.*—While no improvement has taken place in the local labor situation, the call for Nails continues steady. In fact, it is believed that the month of June will make a very fair showing in the quantity sold, under the adverse conditions. The market is firm at the following quotations: Single carloads, \$2.20; small lots from store, \$2.25 to \$2.30.

*Chicago, by Telegraph.*—There is a fair movement on orders previously booked, but the new orders being received are light. However, the market continues firm, the mills being well supplied with contracts upon which specifications have been generally received. The market continues firm in tone, without prospect of a change in prices. Official quotations continue steady at \$2.15 to \$2.20 in carload lots, f.o.b. Chicago. Broken cars sell at 5 to 10 cents higher. For Galvanizing 75 cents per keg and for tinning \$1.50 extra per keg is charged.

*St. Louis, by Telegraph.*—A moderate degree of activity is to be noted for Wire Nails. Small lots from store are quoted at \$2.35.

*Pittsburgh.*—Demand for Wire Nails has fallen off a good deal, due to the strikes in the building trades in various parts of the country. Should these strikes be adjusted it is believed that demand will improve very considerably. Specifications on contracts are coming in quite freely and these are giving the mills plenty of work. Prices are fairly well maintained, being shaded only in exceptional cases by jobbers who have stocks of Nails bought when prices were lower than they are now. We quote \$2 in carloads to jobbers, \$2.05 in carloads to retailers and \$2.15 in small lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days. For galvanizing Nails 75 cents per keg is charged and for tinning Nails \$1.50 per keg extra.

**Cut Nails.**—Demand is not particularly active and mills are able to make prompt shipments. The lighter call for Nails is attributed, in part, to labor troubles, which are more or less prevalent throughout the country. The market is firm and quotations are as follows: \$2.15, base, in carloads and \$2.20 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination; terms 60 days, less 2 per cent. off in 10 days.

*New York.*—The requirements of the trade continue up to jobbers' expectations, and while demand is light there is a continued movement of Nails into dealers' hands. The market remains firm and quotations for carloads and less than carloads are as follows: Carloads on

dock, \$2.29; less than carloads on dock, \$2.33; small lots from store, \$2.40.

**Chicago, by Telegraph.**—The demand from all sources has been light, enabling the mills to make prompt shipments on orders previously placed. But while the market has been quiet, prices have been well sustained on the basis of \$2.30 in carload lots and \$2.35 in less than carload lots for Steel, Chicago. Iron Nails are held at \$2.45 to \$2.50 per keg from store.

**St. Louis, by Telegraph.**—Jobbers report demand of a very fair order for Cut Nails. Small lots from store are quoted: Steel at \$2.45 and Iron at \$2.55.

**Pittsburgh.**—Demand for Cut Nails is only fairly active, being restricted very much by the building strikes prevailing in many of the large cities throughout the country. There is no trouble in getting prompt deliveries for Cut Nails, the supply of Steel and also of cars being adequate for all demands. Prices are being fairly well maintained, and are as follows: Steel Cut Nails, \$2.15, base, in carloads and \$2.20 in less than carloads; Iron Cut Nails, \$2.25, base, in carloads and \$2.30 in less than carloads, plus freight in Tube Rate Book to point of destination, 60 days, less 2 per cent. off in 10 days.

**Barb Wire.**—The quietness incident to the season is making itself manifest by the falling off in demand. Requirements are confined to small lots, while the market remains firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

|  | Painted. | Galv.  |
|--|----------|--------|
| Jobbers, carload lots.....             | \$2.30   | \$2.60 |
| Retailers, carload lots.....           | 2.35     | 2.65   |
| Retailers, less than carload lots..... | 2.45     | 2.75   |

**Chicago, by Telegraph.**—The new orders received have been for smaller shipments; in contracts previously placed specifications have been more liberal. The jobbing trade has been quiet and without special features. Prices have remained steady. Galvanized Wire is selling on the basis of \$2.75 to \$2.80 in carload lots and Painted at \$2.45 to \$2.50, the outside price being to retailers. For small lots 5 to 10 cents extra is charged. Staples in carload lots sell as follows: Polished, \$2.30 to \$2.35, and Galvanized, \$2.70 to \$2.75, the outside price being to retailers.

**St. Louis, by Telegraph.**—For the season a satisfactory demand is being handled by the jobbing trade for Barb Wire. Quotations are as follows: Painted, \$2.65; Galvanized, \$2.95, in small lots from store.

**Pittsburgh.**—The season is about over, and demand is for small lots only. Specifications for old contracts are coming in fairly well, but the mills could handle a larger tonnage, if they had it. Prices are being fairly well maintained, and we quote, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, \$2.30; Galvanized, \$2.60, in carloads to jobbers; Painted, \$2.35; Galvanized, \$2.65, in carloads to retailers; Painted, \$2.45; Galvanized, \$2.75, in small lots to retailers.

**Smooth Fence Wire.**—The demand continues active, while mills are also working on old contracts. The market is firm at the following quotations, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

|                          |        |
|--------------------------|--------|
| Jobbers, carloads.....   | \$1.90 |
| Retailers, carloads..... | 1.95   |
| Less than carloads.....  | 2.05   |

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

|                     | 6 to 9 | 10  | 11  | 12  | 12½ | 13   | 14   | 15 | 16 |
|---------------------|--------|-----|-----|-----|-----|------|------|----|----|
| Annealed.....Base.  | \$0.05 | .10 | .15 | .25 | .35 | .45  | .55  |    |    |
| Galvanized...\$0.30 | .35    | .40 | .45 | .55 | .65 | 1.05 | 1.15 |    |    |

**Chicago, by Telegraph.**—The demand for Fence Wire and Wire Fencing has continued active, and the market has remained firm at the following prices: Nos. 6 to 9 sell at \$2.05 to \$2.10 in carload lots on track, and \$2.15 to \$2.20 in less than carload lots from store, Galvanized bringing 30 cents extra for Nos. 6 to 14 and 60 cents extra for Nos. 15 and 16.

**St. Louis, by Telegraph.**—The demand is of a moderate order, and jobbers' quotations for Smooth Wire are unchanged, as follows: No. 9, \$2.30; Galvanized, 30 cents extra.

**Pittsburgh.**—There is a very heavy demand for Fencing Wire, but on other kinds orders are being placed only for small lots. The mills are busy on contracts placed some time since. Prices in the main are well maintained, and are as follows: Plain Wire, \$1.90, base, for Nos. 6 to 9 in carloads to jobbers, \$1.95 in carloads to retailers and \$2.05 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14 and 60 cents extra for Nos. 15 and 16.

**Binder Twine.**—Conditions continue unsatisfactory, owing to the variety of prices and to the uncertainty as to the probable requirements for Twine. The excessive rains throughout the country have retarded the ripening of grain, and consequently postponed harvest. The straw in many parts of the country is large and the growth rank. Floods, on the other hand, have destroyed crops in many cases, and have put some stocks of Twine under water. Quotations in the East range from 12 to 12½ cents per pound in small quantities for Sisal and Standard. Reports from the West indicate a range of quotations from 10 to 13½ cents in less than carload lots, according to locality and supply. There seems to be a general impression that about the same amount of Twine will be required for the country as last year, but this is more or less supposition under the condition prevailing. The belief is expressed in some quarters that scarcity of Twine, if there is any, will be largely confined to Sisal.

**Cordage.**—Demand for Rope continues fairly active at unchanged quotations. These, on the basis of 7-16 inch and larger, are as follows: Sisal, according to quality, 9 to 10 cents; Manila, on the same basis, 12 cents per pound. A rebate of ¼ cent per pound is allowed on large lots.

**Glass.**—Owing to the slowness with which replies have been received from members of the Jobbers' Association, relative to their acceptance of the combined manufacturers' proposition of a sale of 300,000 boxes of Glass, final acceptance was postponed until June 15. That date has passed and the association have not agreed to buy what there is little prospect of their needing in the near future. Whether the manufacturers will again extend the date of acceptance or carry out their threat of selling direct to the trade remains to be seen. Some are of the opinion that when the jobbers' stocks need replenishing the manufacturers will be willing to sell them. It is not the proposed advance over the former price, that is causing timidity on the part of the jobbers, but lack of demand, and the desire not to have stocks on hand in the fall when the blowing machine may play a prominent part in the market. The Jobbers' Association have advanced prices, which took effect on the 15th inst., as follows: In small lots, 90 and 5 per cent. discount for the first three brackets, and 90 and 15 per cent. discount for all sizes above, either single or double strength. The last allotment of Glass was bought on a new manufacturers' list, in which the list prices of the first three brackets were reduced. The proposed purchase price is based on the old manufacturers' list, which would make an advance to the jobbers of about 10 per cent. in the cost. In prospect of this higher cost, the Jobbers' Association have revised their discounts.

**Oils.**—**Linseed Oil.**—The Seed market has shown weakness by decline in price, and this, with the lack of fair demand, has resulted in an easy undertone to the market. No change has taken place in quotations, which are as follows: City Raw, 44 cents per gallon in lots of five barrels or more, and out of town Raw at 41 cents in like quantity.

**Spirits Turpentine.**—The market has fallen off ½ cent during the week at this point. Demand is moderate for small lots. A firmer feeling is reported for July delivery. Quotations for prompt delivery, according to quantity, are as follows: Southern, 49 to 49½ cents; machine made barrels, 49½ to 50 cents per gallon.

**Stove Boards.**—Manufacturers generally refer to the situation in Stove Boards as reasonably satisfactory. There is an excellent demand for the goods, many of the large trade having covered their requirements by placing

orders at an earlier date than usual. Prices, while somewhat higher than last season, are referred to as not having kept pace with the increased cost of the raw material. The regular discount to the small trade is about 30 and 10 per cent.

## THE CHURCH BELL INCIDENT.

THE reference in our last issue to the experience of the Hardware merchant who found it impracticable, on account of the competition of a catalogue house, to supply the Church Bell for a new church in his town has called out some unusually interesting letters. From some of these we give extracts in the following columns. It will be seen that there is quite general agreement in the views expressed as to the part taken in the transaction by the four parties concerned—the Building Committee, the local Hardware merchant, the jobber and the manufacturer. For convenience in appreciating the force of the opinions expressed in the letters we recall the incident and questions relating to it:

### The Church Bell.

*A retail Hardware merchant receives an inquiry for a Church Bell of given quality and weight, for use in a new church in his town.*

*The merchant obtains from a jobbing house a quotation on the Bell, adds 10 per cent. profit, and names the price to the Building Committee.*

*The Building Committee tell him that they are able to do better by purchasing from a catalogue house, who quote them a price substantially the same as the retailer's cost from the jobber.*

*The merchant takes up the matter with the jobbing house, mentioning the price at which the church can buy the Bell from the catalogue house, and protesting that it is not right that his customer should be able to purchase the Bell as cheaply as he.*

*The jobbing house reply that they added only a moderate percentage of profit to their cost, the catalogue house having purchased the Bell from the manufacturer at the same price as the manufacturer quoted the jobber.*

*The result was that the Building Committee bought the Bell from the catalogue house.*

*Were the Building Committee to blame for buying the Bell from the catalogue house?*

*Was the retailer right in going to the jobber instead of direct to the manufacturer?*

*Should the jobber in any way be held responsible for the fact that the Bell was purchased from the catalogue house and not from the Hardware merchant?*

*Was the manufacturer right in making the catalogue house the same price as the jobber?*

### The Retailer's Shortcomings.

*From a Merchant in Massachusetts:* Answering the questions regarding the transaction of the Church Bell:

To the first I should say, No.

To the second, Yes, unless he carried Bells in stock, in which case he should buy them of the manufacturer.

To the third, No.

To the fourth I should say, No, unless the jobbers did not generally carry Church Bells as a part of their regular stock.

Most retailers will have to adapt themselves to new conditions. In many places their prices have not been changed for years, and they are selling many things at an abnormally large profit and are paying for them whenever they please. These methods are not such as govern the up to date catalogue or department stores, and the consuming public should not be expected to be compelled to buy from stores who are so far behind the "march of modern ideas."

There is so much confusion regarding who are jobbers and who are retailers, and from the fact that most jobbers do retailing, many openly through a retail store and many others selling the larger consumers, and from this it is easy to work down to very small consumers, and as there seems to be no dividing line my own idea is that the manufacturer should not be burdened with small accounts and should have quantities for the basis on which his goods should be sold in every instance, and if the retailers wish to compete with the catalogue and department stores they must through their association secretary or by getting together overhaul their present methods and buy in sufficient lots to get a lower price than they are getting, take cash discounts and revise their selling prices.

They can with these methods sell for cash generally as low as the catalogue houses, and I think generally with

better results, as their whole store will feel the stimulus of new ideas and trade will undoubtedly come to them in larger volume, and as difference is made for cash customers undoubtedly their cash sales will be largely increased.

### From the Manufacturers' Standpoint.

*From a Manufacturer of Church Bells:* We must frankly tell you that our experience has never been anything in the line of what the article refers to. Fully nineteen-twentieths, if not ninety-nine one-hundredths, of our orders come direct, and a great share of these are individual orders, so many of our single Bells, Peals and Chimes being taken as individual gifts.

Whenever a Hardware merchant or a Hardware firm writes to us we quote in reply precisely the same price which we name, or have named, to the neighboring church or individual, and then we make a special deduction to this merchant or company.

In this way we keep our quotations correct and carry out, as we think, proper business courtesy. Our business is peculiarly pleasant, and we are free from the business entanglements which perplex many manufacturers.

### Must Meet Catalogue Prices.

*From a Merchant in New York State:* The Building Committee were not to blame. The retailer should have gone direct to the manufacturer. The jobber is not to be held responsible. The manufacturer was not to blame, for if he did not make the same price to the catalogue house as to the jobber he would not sell the catalogue house at all. The last query brings up the question that is bothering the entire Hardware trade of the country. In our judgment the manufacturer should not sell these catalogue houses to the detriment of the legitimate Hardware trade. Our policy is to meet any price, quality for quality, freight considered, that the catalogue houses may offer. The drift of business is to buy direct from manufacturer, and is growing stronger year by year.

### All Four Parties to Blame.

*From a Merchant in Maine:* 1. The Building Committee ought to have bought from the retailer.

2. The retailer ought to have dealt with the manufacturer.

3. The jobber was responsible in a measure—he ought not to have dealt with a manufacturer who sold a catalogue house as cheaply as a jobber.

4. The manufacturer was wrong.

### Implied Blame for Merchant.

*From a Hardware Merchant in Connecticut:* If we admit that a man has a right to buy in the cheapest market we should say the Building Committee were not to blame for buying the Bell from the catalogue house and the retailer was not right in going to the jobber, instead of direct to the manufacturer.

We do not see why the jobber should be held responsible for the fact that the Bell was purchased through the catalogue house. As the catalogue house and the jobber were on the same footing in regard to quantity, the manufacturer was right in making the catalogue house the same price as the jobber.

Sometimes there are circumstances surrounding a transaction which make it inexpedient to buy in the cheapest market, and if the church for which the Bell was wanted was supported in part by the local dealer, or was likely to call on the dealer for favors, he was fairly entitled to the business.

The jobber holds his position by his ability to buy in larger quantities than the retailer. In the matter of the Church Bell, the jobber and retailer should stand on the same footing.

### Retailer, Jobber and Manufacturer at Fault.

*From the President of a State Association:* This matter of catalogue houses is one that seems hard to down. As to whether the Building Committee were to blame—

for buying the Bell from the catalogue house: In my opinion, they were not to blame for doing this, provided their local dealer was not entitled to any advantage by any connection with the church or with the people. If it was simply a matter of price and they were buying for a public institution, they certainly should buy at the lowest possible price.

As to retailer going to the jobber instead of the manufacturer: My opinion is that he should have tried to buy of the manufacturer when he found that the catalogue house were buying at the same price the jobber was buying at. He certainly should try to place himself on the same level. This would not seem just to the jobber, but there is no justice in allowing a large retail house (that is what a catalogue house is) the same price as a jobber.

As to the third question, the jobber, if he cared to hold the custom of this party, could have, in this instance, made the sale to his customer without profit, provided the jobber cared to get even with this catalogue house, and in a sense, I think that the jobber is somewhat to blame for the fact that the catalogue house sold the Bell.

As to the latter question, decidedly the manufacturer is not right in making the catalogue house the same price that he makes the jobber.

We must all remember one thing in dealing with this subject: This is a free country, and every citizen has the right to buy and sell articles of merchandise in any way that he sees fit. It hurts us, to be sure, to have a competitor sell goods at cost or less than the price at which we sell them, but we cannot prevent it if he sees fit to do it.

A great many manufacturers are anxious to give the catalogue houses their business to the extent that they will give them the lowest price that they have, and they will probably tell us that this house buy in as large quantities as any jobber. I notice one thing, and that is, that one of the largest catalogue houses in the country, I am told, are not selling any goods in their own city. They are located in a city next to the largest in the United States. No citizen of that city can buy goods of them, so that they seem willing to protect their personal friends, but do not care how they hurt the rest of us. This, of course, is another case where personal liberty comes in. We cannot prevent it. I sometimes think the more we talk about these fellows, the more we advertise them and acknowledge that we cannot compete with them, so that I, for one, have as little to say as possible about competitors who are selling goods for less price than I am. People will find it out soon enough without our telling them. I really can see no remedy for the evil.

If I know of any manufacturer who sells these people at these bottom prices, I shall endeavor to buy goods of somebody else. I know of one or two manufacturers, the best in their line, who will not sell these people at any better price than they sell the retail trade, and it seems to me that if we do anything or try to do anything, we should try to induce the manufacturers to take this step and let these people pay the price that the retail trade does.

#### The Jobber's Short Sighted Policy.

*From a Merchant in Illinois:* Regarding the Bell controversy, we think the committee somewhat to blame for buying the Bell of the catalogue house if there was a saving of only 10 per cent., as usually every merchant has to contribute something toward all churches. If the merchant did not contribute he could have made the Bell at cost, and we think have gotten off easily. Church Bells are so seldom called for that the retailer probably did not know just where to find a manufacturer.

Under the circumstances it would seem to us it would have been a good advertisement all around if the jobber had made a special cost price in this instance. It is just such instances as this that compel the retailer to go round the jobber whenever he can. We cannot blame the manufacturer much for making the same price on Church Bells to catalogue houses as jobbers, for the chances are that the catalogue house sell more Church Bells than the jobber, but on the general line of Hardware, or any other

line, we do not think catalogue houses should buy as low as the jobbers, and we do not think they usually do. As a rule, we do not have much trouble in meeting catalogue house prices and still make a fair margin. We feel they have come to stay, and the only way to get even with them is to meet their prices, or nearly so.

### THE IRON AGE DIRECTORY.

THE new edition of THE IRON AGE DIRECTORY, which has been in preparation for some time, is now about ready for distribution, and a copy of it will be sent by early mail to all our subscribers all over the world.

THE IRON AGE DIRECTORY, which is issued in the same form as last year, is a compact, handy and useful reference work for the busy buyer and merchant, who, in the constantly increasing volume of miscellaneous products, are often puzzled to know how best quickly to ascertain the manufacturers. The frequent and expert revisions of the Directory in the field it covers keep its matter thoroughly up to date, being corrected up to within two or three weeks of its publication. The Directory contains over 300 printed pages, each 4½ x 6¾ inches, bound in a flexible red cover, in which are classified all the products of 1,400 concerns advertising in *The Iron Age*. The headings and cross references are arranged in dictionary style, self indexed, so that the inquirer turns directly to the article sought, and even with much condensation embrace 5223 different Tools, Machines and Miscellaneous Hardware and allied merchandise. The value of this Directory is apparent, embracing as it does the products of such a large and representative body of manufacturers of metals and analogous goods.

### CORRESPONDENCE.

BANTAM, CONN., June 15, 1903.

*To the Editor:* I had my attention called to an item in your British correspondence, issue of June 11, and wish to advise you and your readers that the Rochester Time Recorder is not the only machine adapted for using my system of cost and time keeping, made public when I was general manager of the Ball Bearing Company of Boston.

The Industrial Time and Cost Keeping System of this place furnishes not only the complete system adapted for any and all purposes, but also furnishes a recorder, which does equally as good work at but little more than one-half the cost of the Rochester machine alone. It is in use by some of the best and largest corporations in this country, and is also very popular in Germany.

Trusting you will make this correction.

Yours very truly,

W. S. ROGERS, Manager.

THE INDUSTRIAL TIME KEEPING AND COST SYSTEM.

ON June 30 Jas. H. Baker will retire from the position of general manager of the Jas. H. Baker Mfg. Company, Pittsburgh, Pa., which he has held since the organization of the company. This change will enable Mr. Baker to become active in broader lines, concerning which the trade will be advised in due course. Mr. Baker has been long identified with the manufacture of Farm Wagons, Chains, Wagon Hardware, Railroad Forgings, &c., in different companies and in individual enterprises under his own name. He will now work toward crystallizing some of the results of these operations. Mr. Baker was first identified with the Baker Wagon Works, next went into the Baker Chain & Wagon Iron Mfg. Company, then organized the Baker Forge Company, which was merged into the steel car industry, and four years ago established the company from which he is about to withdraw.

THE LEVI HEY COMPANY, Rochester, N. Y., dealers in Iron, Steel, Metals, &c., have changed the style of their corporation to Hey & Co. This change is one in name only, and does not affect the management or personnel of the concern.

## Arkansas Retail Hardware Dealers' Association.

THE fourth annual meeting of the Arkansas Retail Hardware Dealers' Association was held at Little Rock on the 10th and 11th inst. The meeting proved to be the largest and most interesting yet held by the association. During the past year, and including those taken in at the meeting, the membership has increased over 50 per cent.

### WEDNESDAY MORNING SESSION.

The convention opened on Wednesday morning, 10th inst., and was called to order by the president, John M. Pittman of Prescott. After invocation by the Rev. T. W. O'Kelley, Mayor Lennon was introduced, and extended a very hearty welcome to the delegates.

#### Mr. Jackson's Address.

W. A. Jackson of Dardanelle responded on behalf of the association, as follows:

It is my very pleasant duty, in behalf of the members of this association, to extend to the Mayor, and also to the good citizens of the city of Little Rock, our sincere thanks for this cordial and hearty welcome that has been extended.

About four years ago we organized what is now known as the Arkansas Retail Hardware Dealers' Association. When we came together, the good citizens, the Hardware retail dealers and the jobbers took quite a great interest in helping us to organize. I want to say here that the interest taken by these people will not be forgotten by the members of this association. We appreciate every kindness, as most Hardware dealers do. I am glad to see such a good number present, and am confident that not one of our members who has been a regular attendant at these gatherings returns to his home after having done so without feeling that he has been benefited, not only in a business way, but socially and otherwise as well.

Now, my fellow Hardware dealers and visitors, since the honorable Mayor has so kindly tendered to us the key to this city, a city of which we are all proud, the home of the capitol of the grand old State of Arkansas, I warn you to handle it carefully, and when we have done with this convention, we want to turn the key back in as good condition as we received it, so that should we decide to hold another meeting in this city, having conducted ourselves so well, we will be heartily and cheerfully received.

Roll call followed Mr. Jackson's address. The president appointed the following Auditing Committee: J. A. Plummer, chairman; E. E. Mitchell and R. P. Graham.

An invitation, signed by W. W. Dickinson Hardware Company and Fones Bros. Hardware Company, was read by the secretary, inviting the delegates to attend the baseball game on Thursday afternoon at the West End Park, between Birmingham and Little Rock.

A letter from C. T. Rosenthal of Batesville was read, expressing his regret at being unable to attend the convention. Adjournment was then taken until 2 o'clock.

### WEDNESDAY AFTERNOON SESSION.

After calling the meeting to order President Pittman appointed J. B. Avery, P. J. Tidwell, C. B. Winbourn, C. F. Wingfield and F. B. Gregg as a Committee on Nomination of Officers for the ensuing year.

#### Secretary's Report.

C. E. Taylor read his report as secretary, as follows:

Nearly all my work as secretary during the year that has passed has been done by correspondence. I had the help of a stenographer and wrote during the year a number of letters, 1512, to be exact, relative to the business of the association. Not all these letters were answered, however; in fact several letters that I wrote to the members of the association remain unanswered to this day. I obtained from other State secretaries some data concerning their experiences, and I have fashioned my work

after that being done in the largest associations. They have about the same difficulties confronting them that we have, or rather have had, in the larger associations, for when an association has a strong membership, as in Minnesota or Ohio or Indiana, comparatively small annoyances such as trouble us disappear, and the association by its very strength commands respect and gets it. But we are growing and will continue to grow, yet there are many strong firms in the State who ought to belong to our association on whom I have not been able to make an impression. I have a mailing list of 144 names of Hardwaremen whom we would like to have unite with us, also a list of 82 names of general stores who handle Hardware and who are located in towns where there is no Hardware store.

#### MEMBERSHIP.

We had at the last convention 54 members. In my correspondence during the year I learned that eight of the 54 had been counted in error, leaving 46. Two members have discontinued business and one withdrew from the association, leaving 43. Added to this number we have received 15 new members, making the total membership to-day 58 members. There have been three changes in the firms belonging to this association, but their successors continue membership with us. The letters sent out of this office, which were in turn mailed by the members of this association to those we desired to join, had a good effect. One man wrote, "Here is my check for \$5. I got so many letters from other merchants asking me to join that I do this in self defense."

#### GRIEVANCES.

Several members submitted complaints to the effect that the railroad and express companies' agents were distributing literature from catalogue houses. The agents received a small compensation for their services.

The matter was taken up with the officials of the railroad companies and the practice promptly forbidden, not only in the cases complained of, but the order was made a general one, covering the entire system.

#### BUYING NAILS AND WIRE.

Some of our members wanted me to buy Nails and Wire in carload lots, so as to save them the jobber's profits. I looked into the matter carefully and after consultation with the Executive Committee decided not to attempt it. The jobber's profits on these commodities are small, and besides the association does not wish to antagonize the jobber. Rather we want him as our friend. And I may say that the jobbers are friendly to our association and have evidenced it materially in the publication of the 1903 programme, which will be referred to later elsewhere. All but one of the State secretaries said they considered the plan unwise, that in their judgment it would not work satisfactorily to any of the parties concerned.

#### 1903 PROGRAMME.

The publication of this little book called for a lot of labor. Many letters, about 480, were written to prospective advertisers and more than 400 responded. The total cost, not counting my time or the stenographer's, was \$133.37, while the revenue therefrom was \$386, leaving net to the association \$252.63. Not all of this amount has been paid, but it will be paid in a few days. The book contains some interesting articles, and I think will prove the means of inducing some dealers to join who are not now members.

Copies were sent to all the mailing list referred to before and to sundry other parties also, the advertisers, the other State secretaries, to traveling men and some concerns who should have advertised, but did not, just to show them what they have missed.

In all nearly 500 copies have been mailed, the other copies, about 250, are here and may be taken away by members if they want them.

#### FRATERNAL RELATIONS.

I have referred several times to the other State secretaries. Our relations with the other associations and

National Association are pleasant and encouraging. The reports from all the States indicate a great deal of interest in organized effort among Hardwaremen, and a better understanding between the members through meeting in annual convention.

On account of press of business I could not attend the annual meeting of the National Association in Chicago in March. Mr. Plummer, the other delegate, you will regret to learn, was kept away by illness.

Mr. Corey, the secretary of the National Association, is with us to-day, at our request, and will no doubt add much to the wisdom of the deliberations of the association.

#### PROCEEDINGS 1902 CONVENTION.

As instructed by you I printed and distributed the minutes of the last convention. One would be surprised to learn how far these little books go. For instance, I saw Hamp Williams' article, which was printed in full in the minutes, copied in a Canadian paper.

#### TRANSPORTATION.

Acting for the transportation companies I obtained from all the railroads a rate of a fare and one-third for the round trip, if 50 tickets are sold.

#### INSURANCE.

This matter should receive the attention of the association, and doubtless will, since the association programme calls for a discussion of the subject. It is apparent that Hardware dealers in other States are finding it to their interest to sustain their own insurance companies. Whether the conditions in this State justify the members of our organization in making an effort of this kind, or whether on account of our size it would be better to patronize the Hardware insurance companies of other States, is a topic for the careful consideration of this association.

#### DUES.

Twenty-one members of the association owe \$155 dues, all of which except \$35 will probably be paid. I have sent these members two letters relative to the matter, but presume that the request has been overlooked. I preferred not to draw for the amount, and much of it will probably be paid to-day and to-morrow. If it is not paid, however, collection should be made at once.

In conclusion I desire to thank the officers and the members of the association for courtesies shown me throughout the year, also for kindly co-operation in the work of the association. If I have appeared to usurp the duties of any committee I should explain that I felt sure that I was helping instead of hindering, knowing that the work was to be done.

#### President's Address.

The president read his annual address, as follows:

Until a few days ago I did not think of writing an annual address. When I saw my name on the programme for one I began to look for something to say.

#### JOBBERS AND MANUFACTURERS.

So far as I have been informed there have been but few complaints from our membership during the past year of any violation of rights and privileges of the retail dealer by jobbers or manufacturers. With very few exceptions they seem to be using their best endeavors to meet our views on trade relations. I feel quite sure in making the statement that there is now no disposition among them to antagonize our principles, when properly understood. And I want to say that these principles are better understood and recognized than when our organization was younger. We are learning to understand each other better, and as we do so our differences melt away.

#### CATALOGUE HOUSES.

During last summer we found that one of the notorious catalogue houses of Chicago were using the railroad companies' agents to distribute their catalogue. This house were shipping their catalogues by freight to clerks in the depots in large quantities, and then, securing a list of the names of farmers that traded in the towns where the depots are located, they would mail an order to each one on their mailing list, asking him to call on the clerks and get a catalogue that had been sent for him.

In this way the heavy expense of mailing and express charges was avoided. I took this matter up with the Missouri Pacific Railway Company, as did your worthy secretary, and each of us secured an order prohibiting the railroad companies' agents from distributing any more catalogues in this manner.

#### FIRE INSURANCE.

Every first-class retail Hardware dealer carries a reasonable amount of fire insurance. This is a question, therefore, which concerns every dealer. It is a part of his business, and as such deserves careful and thoughtful consideration. It has been shown over and over again that a Hardware stock is a less hazardous risk than the average mercantile stock of goods, and yet we are charged the same rates; and in cases where we use warehouses, as most of us do, our rates are much higher. This has led many of the State associations to organize mutual companies. Without a single exception these companies have proven a wonderful saving in premium, and in some of the States the premiums alone have built up some strong companies. The National Association has a committee at work on a plan for mutual co-operative insurance, with fair prospects of being ready for business in the near future. According to the report of the Auditor of State lately published, the fire insurance companies in this State during the past 12 months paid only 42 per cent. of their premiums for fire losses, and about 37 per cent. for expenses; and still during that time they raised the premiums 25 per cent. I call your attention especially to the exorbitant expense account that we must pay. I hope that every member of our organization will place a share of his business with some one of the companies conducted by our sister State associations until we can organize in this State, or until the National is ready to take our business.

#### EXECUTIVE OR CLOSED SESSIONS.

I am very much in favor of having all our business transacted in closed sessions. This need not interfere with the presence of our visiting friends, any and all of whom we are glad to have with us and watch our movements. I think we should set apart at least a half day's session to our friends, the jobbers and manufacturers, and those who desire to meet and mingle with us, during which time they may set forth their views on any topics of interest. Questions that come before our association for discussion and adjustment are of such a nature that they cannot be properly handled in open session. Several of the States have adopted this course, and it is recommended by the national bulletins. All the sessions of the National are strictly executive.

#### REPRESENTATION IN THE NATIONAL ASSOCIATION.

In my opinion we made a mistake in not making positive provisions at our last session for sending a delegate to the National meeting. The work of the National is incomplete and unsatisfactory with an unrepresented membership, and, besides this, it loses in power and influence when it is seen that a State does not take enough interest in a meeting of the National to send one or more delegates. Without entering into a detailed discussion of this important matter at this point, I urgently recommend that we do not fail to send a delegate to the next meeting.

#### THE OFFICIAL PROGRAMME.

This was recommended by our president a year ago. I notice from the proceedings of the last National meeting that it is recommended that the State associations refrain from issuing these official souvenir programmes. This is done because of the fact that the sources of revenue for the National are very limited and because of the fact that the official programme business is being very much overworked by the States, which makes it very much harder on the National to secure remunerative patronage.

#### INCREASE OUR MEMBERSHIP.

Our membership in this State is not as strong as it should be. With one exception, I think, we are the smallest State organization affiliated with the National. This ought not to be so. Our secretary has worked hard and faithfully to increase the membership, and while I have

not seen a late list I feel safe in saying that the increase has not been commensurate with his efforts. I have spent considerable thought along this line, but I have no plan that we have not tried that I feel safe in recommending. The membership fee is not large, when measured by the benefits to be obtained, but so far as I know we charge a little more than any other State. It might be well to try an experiment and see if we cannot gain more members and increase our revenue by a reduction in the membership fee.

In conclusion I wish to say that the principal part of the work for the past year has fallen upon your very worthy and efficient secretary. He has attended to the duties of his office and assisted me promptly at all times. Whatever of success has attended our association during the past year to him belongs most of the honor.

On motion the recommendations of the president were referred to the Executive Committee for consideration.

#### How to Build Up a Successful Hardware Business.

Two papers were read on this subject. The first, by R. F. Roys of Russellville, was as follows:

I feel that it is an honor, indeed, to be permitted to say anything to so intelligent a body of men as we have here with us to-day, and I also feel that some one else should have taken this subject and render it more justice than I can, but during my entire life I have always felt that it was my duty to perform any task that might be a benefit either to myself or any one else. So at the request of our worthy secretary I will try to give a few of my ideas in regard to building up a retail Hardware business.

##### HARDWAREMAN MUST BE PROGRESSIVE.

In the first place a Hardwareman is placed in a rather peculiar position as compared with merchants in other lines. He to a certain extent has to fill a position something similar to a school teacher. For he it is that is expected to bring before the masses of the people, especially in the smaller places, everything that is new in the way of tools to work with, and to show them what the advantages are in accepting new methods. This world is now in a very progressive age, and a man in the Hardware business must from necessity be a progressive man to make a success of his business. In fact, I do not think that he can be successful unless he is progressive, and I believe that if you will take Hardwaremen all over the country you will find that as a class they want to be in the front rank. The Hardwareman comes first and foremost in everything. The groceryman sells you food that keeps soul and body together, but it is the Hardwareman that has to furnish the Scale to see that you get justice, and what you pay your money for, and it is he that has to furnish the utensils that prepare your meals. The dry goods man sells the clothes for your body, but it is the Hardwareman who furnishes the Rule to measure the cloth and the Shears to cut it and the Machine to sew the seams. When the young man and his best girl have left the parental roof to make a home for themselves, it is the Hardwareman that furnishes the Nails to hold the roof over their head; or the Axe and Saw to cut the timber, &c. And so it is, in making the home, developing the natural resources of the country, providing the necessary equipment for the farm, supplying the Tools for the mechanic in any trade, the Hardwareman takes a place that cannot be successfully filled by any one else. So with all of these advantages in our favor why should we not be in a position to build up a successful business if we follow the proper course? Therefore, the idea is presented to us as to how to build up a successful retail Hardware business.

##### LOCATION.

In handling this subject I would divide it into six different heads. First, would be location and arrangement of stock. To make a start in the right direction, we want a location where lots of people pass our place of business every day—a good room, plenty of light and good show windows. Arrange your stock in good style. You can always get good points from your neighbors, and

in this particular you can also watch your competitors. If you have no competitor, then my advice would be to get one as quickly as you can, for no matter how little he may be posted (the less the better in some respects) you may possibly be able to get some good points from him.

##### IN ARRANGING YOUR STOCK

try to get your Shotgun and Ammunition as near together as you can, and don't put your Horseshoes on one side of the house and your Horseshoe Nails on the other. Classify your entire stock; get all of your Builders' Hardware as close together as your room will permit. If you are using open Shelving, save your empty boxes and use them to stop up the holes made during the day's business. If you are using Cabinet Shelves, have your samples well arranged. You cannot spend too much time on this item, for goods well displayed are an important factor in gaining trade. Keep your Stoves neatly polished and arranged according to size or grade, whichever suits you best. Neat platforms in the rooms used to display large or bulky articles are much better than letting the goods stand on the floor. Change the arrangement of your interior occasionally. It helps appearances and creates a different impression. For the looker of to-day may be the buyer of to-morrow.

##### CLERKS.

Don't allow dust to accumulate and settle on your goods; and, above all things, don't allow your clerks to be a gang of loafers around you. Set them an example, if necessary, by getting into the harness and work with them, for nothing creates a worse impression than to see a set of clerks sitting around a store. The people will soon get to saying, "Why, that fellow don't seem to be doing much; his clerks are sitting around every time I go by there." Always be busy if you have to tear down to-day what you put up yesterday, but never be too busy to pay attention to the least want of any customer that may come into your store.

##### PRICES.

Another thing to be observed very closely is to keep prices on everything in the house, for no matter how well posted you or your head clerks may be it is annoying and discouraging to have some one in the house asking every few minutes, What is this worth? Always mark the price that you expect to ask—for instance, if you have a line of goods that you have bought at a bargain, or have got an extra good freight rate on it, ask the price that you would have to sell at provided you had to replace it on a regular purchase, or had to buy more and ship in a local way to finish out the season; and do not get into the habit of asking one price and taking less, for the more you do it, the more you will have to do it; and don't try to undersell the other fellow, for possibly he is trying to do the same thing, and perhaps he has been able to buy the same article at a less price than you have, and can make you dance and pay the fiddler besides. And then price cutting becomes disastrous. Always have your nerve with you, and when it gets late in the season for seasonable goods I think it better to carry a small lot over till the next season than to cut the price to any extent to clean up stock, for the same Screen Door that you have in stock this year will be just as stylish next year, and will be wanted just the same. Of course, if you are convinced that you will be able to buy at a less figure for your next season's trade, then it is well enough to look out for a clean disposition before the season closes.

##### FORMING ACQUAINTANCES.

Do not miss the opportunity to form the acquaintance of every one that you come in contact with. The little boy or girl that is sent to your store has a certain amount of confidence, simply because they were sent there, and the thing you want to do is to keep that confidence, for the Hardwareman is a long lived fellow and he expects to live long enough to sell these children what they want when they are grown and go to buy for themselves. Talk to them about their childish pleasures and show them things that will interest them, for they are sure to go home and tell their parents all they saw and heard, and it is the holder of the purse string that you want to reach. The father or mother coming

to the store should be greeted in a pleasant way and given a hearty handshake, and you should inquire about what their prospects are, if they are pleased with the outlook for crops or work going on. Condole with them if they have suffered misfortune; it is sympathy which they are looking for. Don't let the old grandfather or grandmother stand up unless they want to; always have a chair handy. If it is cold weather keep a warm fire and get them a seat close to it. If it is summer time don't hide the water cooler. Should a new family come into your town or neighborhood get to them as quickly as you can. Perhaps you will only sell them a box of Tacks at first, but if you show them that you appreciate small purchases the chances are they will try you on a larger one. If there is a new industry starting in your community, get yourselves posted on the goods it will require and call on the managers and get them to try you on a small order. If you are troubled with catalogue houses, meet them on their own ground. I always keep a full set of their catalogues handy, and when a customer is intent on trying them I send his order for him if he will let me. I do not want a cent of profit on this class of trade, for about one dose of it is all that the buyer wants after you have had a chance to show him.

#### ADVERTISING.

This is a point that I believe I could write on and on and never give the subject full justice. Unless you hustle in connection with your advertising you had better keep your money in your pocket. I think it is a good idea to take a title in connection with your name in all your advertising schemes. For instance, I never allow any of my ads. in a local paper to appear only under the caption or heading of "Roys, the Hardware-man." I also use in connection with this a phrase of some kind which I try to use in all my local advertising, store circulars, statements of accounts, &c., something like this: "You stay with me and I will stay with you." Change your ads. every week if you possibly can. If you follow this up closely it will get so that you will be crowded for time to write a change. I have found it so quite frequently. I make it a point to use at least 1 per cent. of my total sales for advertising purposes, and I find that it pays. Use plenty of road signs and see that there is a good supply of them on all the roads into town all the time. If you keep your name before the public in connection with what you are selling all the time people will think of you when they want to buy. Keep a small book in your pocket handy all the time and when any one makes an inquiry for anything, no matter if he says he does not expect to buy until next year, put his name down in that book, and when the proper season comes send him a circular, then write him a personal letter, telling him that you heard him say the year before that he wanted such an article and call his attention to what you have. If that does not bring a response, get in your buggy and go after him, and, by the way, have your name on your buggy where it can be seen. Maybe some fellow that you are not thinking about will call to you and ask you about something that will lead to a purchase. Some might think the other fellow would do the same thing; let him—that is what you want. If you don't make the sale that you have gone out to make you will possibly strike some one that the other fellow talked up to the buying point, and it does no harm to mix with your customers. There are hundreds of ways to get people interested in what you are selling. The main thing is to meet every demand as far as you are able. Keep thoroughly posted and don't let the grass grow under your feet.

#### J. B. Avara's Paper.

Mr. Avara's paper, on the subject of "Building Up a Hardware Business," was as follows:

Our secretary has asked me to read a paper before this association on a subject that has been my constant study for the past 11 years, and as far as I am concerned it is no nearer a satisfactory solution now than when I first began studying it; in fact, it looked much easier at that time than it does now.

The subject selected was "How to Build Up a Retail Hardware Business," and if I were anything of a writer I might possibly give you a theory that would seem plausible on the face of it, but when practically applied, I dare say, it would be found full of faults and would overlook many of the small but important predicaments that confront us daily, and which have to be met squarely on the moment. On the other hand, I might go into details and give you all the ups and downs that I've had with my little business since the beginning, but as I consider what little success I have had in building up a retail Hardware business as more of an accident than otherwise, I don't think my experience would be a good criterion to be guided by.

While I do not consider my business any different from most others of the kind throughout the State, I cannot help recalling the ideas I had of the Hardware business before I went into it. When I was up at Atkins, and in the grocery business and with very limited capital, I was hustling from daybreak till 10 and 12 o'clock at night trying to keep even with the invoices that would seem to pile up much faster than my cash drawer would fill. I could look across the street at the only Hardware store and see the proprietor with a piece of white pine in one hand and a Knife in the other, and a lot of agreeable loafers all sitting around on empty Nail kegs, whitening and spinning yarns and seemingly enjoying life to its limit, and apparently making all the money he wanted. I confess I envied him, and decided that there was more money and less work in a Hardware business than in anything else, so I decided I would get into it and have a good easy time all the balance of my life. Well, I must say that I never made a bigger mistake than when I went into the Hardware business expecting to make money without work, and I now believe that the successful Hardware dealer is the hardest worked man you can find in any line of trade. If I should be called on to tell a new beginner how to build up a Hardware business, the first thing I should say would be: "Young man, go to work, work hard, work all the time, and keep everlastingly at it."

#### QUALITY ESSENTIAL.

Now as to how to build up a retail Hardware business, I should say at all times buy dependable and desirable lines of goods and don't switch off after trashy stuff simply because the price is low, but keep quality to the front at all times. It may be and is necessary in most stores to keep a certain amount of low priced goods to meet possible competition, and also to aid in selling the better goods by comparison. My experience is that if two articles are placed before a customer, one of the so-called cheap kind and the other a good one at the right price, nine times in ten the better article will be sold.

#### ARRANGING GOODS.

The next thing in building up a Hardware business, and I consider a most important factor, is to properly arrange your goods for ease in handling and display them well. Keep the whole stock on dress parade as near as possible at all times. The old saying that "goods well bought are half sold" should be changed to read that "goods well displayed sell themselves." Fix a place for everything and have everything kept in its place, and for a model store in this respect I would refer you to the store of one of our most successful Hardware dealers, Mr. Rosenthal, of Batesville. Don't be afraid to spend money, a little if it will do, a whole lot if necessary, in fixing up your store. Make it attractive to your customers, and it will have more attraction for you and your clerks will take a greater interest in the business. Study the needs of each line of goods for displaying and ease in handling. Frequent changes, if only minor ones, in and about your store will help to create the interest of the buying public in you and your business. Hardware dealers, as a rule, are not supposed to have a great deal of pride in their make up, but it does one good to have a customer come in, and say: "Hello! you've fixed things, haven't you?" Your store looks better. Right then you know the change has made a good impression and good impressions mean more business every time.

## ADVERTISING.

After you have the stock and have it well displayed, advertise it. Advertise truthfully, persistently and judiciously, and as to what is judicious advertising—each man must determine for himself, as the same medium will not answer for all purposes nor for all parties. I consider the local papers the most effective for the expense, but think it should be supplemented with other kinds occasionally. Most all advertising is worth something, but there is a lot of it that is not worth what it costs.

## FRIENDSHIP WITH COMPETITORS.

Another thing, keep on friendly, and, if possible, on intimate terms with your competitors. Think down deep in your hearts that the other fellow is just as good a man as you, and that he is just as anxious to make something out of his business as you are and cultivate his acquaintance, and you will find him ready at nearly all times to help you correct any evil conditions that may exist and which affect his business as they do yours.

## CUTTING PRICES.

Never make a practice of cutting prices, but meet any legitimate price your competitor makes, and do it with as good grace as you can. On the other hand, do not make your prices too high, even where you have it all your own way; it encourages new competition, it places you at a disadvantage should some one else start a business in your town, and it does more to encourage the mail order business for the catalogue houses than any other one thing. Keep posted on the lines of goods your competitors handle, not for the purpose of talking his goods down, but by knowing his goods as well as your own you will be better able to talk your goods up. His goods or implements may be just as good, sometimes better than those you handle; but if you are posted well enough to show all the good points of your article your customer will most likely infer that your article must be better. You know all about all of them, and when you show a customer that you know more about the goods he wants than he knows himself, he is very likely to take your word for the balance and make the purchase.

## CLOSE WATCH ON STOCK.

Another material aid in building up a retail Hardware business is to keep a close watch on your stock, and keep it replenished with the thousand and one small items that you may have constant or occasional calls for. I dare say a majority of us would be surprised if a record was kept of the number of calls we have for little items that we are temporarily out of, and thereby miss the sale of that particular article, and most likely of something else that might have been sold at the same time. I believe in buying small and often rather than otherwise. It makes more work, but it keeps your stock in better condition, and you can do more business on the same amount of capital, and, on the whole, it is much better than overbuying on a few lines and letting your stock on other lines run down, even if you should get an extra 5 per cent. discount on the larger quantity.

## IN BUYING

use the traveling man for all he is worth; by treating him courteously at all times you can frequently get information that will do you good, and he is always willing to let you in on the ground floor on any bargains that his house is offering, and, on the whole, he is as good a friend as the retailer has if he is rightly used; and, on the other hand, the fellow who is just out with some patented specialty and is only placing it in the hands of the best dealers in each town, provided he will buy a gross or more, may prove to be the most expensive acquaintance on the road. To get the most good from the traveling man we must keep thoroughly posted on markets, current prices and anticipated changes, and to do this it is absolutely necessary that you have several good trade journals come to your desk, and don't throw them in the waste basket without scanning their pages.

## THE JOBBER.

We all know of some traveling men who think their individuality is of more importance than the houses they represent; so after the traveling man we will say some-

thing about the jobbers. I think the retail dealers as a rule consider the jobbers as the legitimate and most accessible source of supply, and we should always be honest with them. If by mistake they send you a dozen of an article and only charge you with a half dozen it should, be reported to them, and if when you receive your goods you find in a lot of Hatches, Axes, Pocket Knives or any other similar articles, one or more that shows the finger marks of many hands and is rusted in a way that clearly shows that that particular article has served its time in the sample room or in the salesman's grip, I say be honest with the jobber and send the damaged article back to him. Don't be a chronic kicker, but when you have a kick coming be sure you are right then kick gently, but firmly.

## TREATMENT OF CUSTOMERS.

Last but not least, the success we may have in building up a retail Hardware business depends to a great extent on the treatment of our customers, for without them we have no business, and a safe rule is that a pleased customer is our best advertisement and this should be kept in view. Be courteous, cheerful, sympathetic, firm and honest with them at all times, and try to sell them what they want, rather than something that might be similar, yet not just what they were looking for.

## IN SELLING ON CREDIT

It is decidedly best to always have a specified time for settlement, and at that time insist on the payment of the note or the account. It is bad policy to sell goods on credit to a man who will not set some definite time to pay, and where the sale is of an implement, buggy, wagon or set of harness, it is easier collected if the matter is closed at time of the transaction with a note than if placed in an open account, and the purchaser will more likely meet it on time.

Make your customers your friends and always adjust any little difference or grievances your customer may have if you think they are honest in their claims, even if it should be a small loss to you to do so. Work to retain old customers, and at the same time get as many new ones as possible and you will gain their complete confidence; and put the proper amount of push behind the business, keep the stock up to date, encourage and aid the Arkansas Retail Hardware Dealers' Association; these things taken altogether, or in broken doses, will certainly tend to build up a retail Hardware business.

## Common Sense and Enthusiasm in Business.

C. F. Wingfield of Hope presented the following paper on "Common Sense and Enthusiasm in Business":

The subject assigned me is the subject not only for this hour, but for all time to come. This assertion is made with a view to success. If success is the object in business, then it can only be acquired by possessing and adhering to the two qualities.

I do not assert this just for our line of business, but for all business, all pursuits, all avocations and for all time to come, hence the importance of rightly understanding and appreciating this topic to which I am assigned.

Many persons have possessed other requirements from a thorough course of training at business colleges, and by coming in contact with up to date business and professional men; they can theorize all day long and yet, not possessing common sense, or tact, or adaptability, have been signal failures, while, on the other hand, many have not enjoyed these privileges, yet possessing common sense have gone on and made a great success of their business. This remark is not made to depreciate a regular course of business preparation, for every one must take advantage of such a thing, but the statement is made to place the maximum upon common sense and to show that it is everything in business, and other qualifications of the highest type cannot be substituted for it.

Each day we come in contact with all kinds of people, of every shape, order and eccentricities. The Almighty never made two alike, and there is no one rule that can be applied in one touch with them. Yet these can be met, they can be handled, and the one with common sense is the one to do this. It not only works in

our line of business, but with every calling and profession. While we admit that the minister is *jure Divino*, yet unless he possesses the gift he is not acceptable among us. Hence then a high and costly premium is placed upon the one possessing this great qualification.

#### ENTHUSIASM.

Next, a word on enthusiasm. This is the twin sister to common sense, and the only sister she has, and like our sister, she is inseparable and indispensable.

In the former topic we saw how many various kinds of people we meet; hear what various kinds of business among men, and out of this grows the competition of the day. We are not afraid of competition. To it largely is due the success of development of trade. It calls for all the skill and energy that one possesses.

In this day of competition and rivalry enthusiasm is absolutely necessary; zeal and energy must be infused into every one, or they will lag behind and allow others to outrun them in the race to success.

Allow me to drop one word here, and that is, there is just a little misapprehension of enthusiasm. One who is an enthusiast oftentimes is regarded as a crank, and people say "he is crazy on the topic," or "runs it in the ground."

When the enthusiastic Saul of Tarsus stood before King Agrippa and pressed on him "duty to eternal truths," the King could only justify the eccentric speaker on the ground of "temporary madness." The same charges are made now against those who are enthusiastic in their business, but the same rejoinder can be used, "I am not mad, but am enthusiastic over that which claims my attention." I almost venture the assertion without enthusiasm there can be no success. I base this upon the lives of successful men. They were lost to every other calling, and concentrated their minds on their one subject and pursuit.

Now couple these qualities, common sense and enthusiasm together, and with a world of competition, and trade growing duller and duller each day, we can go on and make a great success of our business.

#### President's Recommendations.

The recommendations of the president were then taken up and discussed. The matter of insurance was gone into thoroughly and many of the members told of personal experiences. The following resolution was adopted;

*Resolved*, That we, the Arkansas Retail Dealers' Hardware Association, having duly considered the question of insurance and believing that the rates now paid by us are too high, hereby recommend to our members that we place at least some of our insurance with the Hardware Insurance companies of other States.

The question of closed sessions was then discussed. It was the view of those present that closed sessions were advantageous and desirable, although some provision should be made for admitting those not Hardware merchants to some of the proceedings of the convention.

As to representation at the annual meeting of the National Association, it was moved that a delegate be elected for this purpose, and the matter of nomination was referred to the Nominations Committee.

M. L. Corey, secretary-treasurer of the National Association, made a short address in which he assured the delegates of the interest the National Association took in all State organizations, whether large or small.

#### Increasing the Membership.

C. E. Taylor, secretary, spoke on the question of increasing the membership. The membership a year ago was 46, to which 23 names had since been added, making a 50 per cent. increase. Every member should lend his aid in this direction. Associations in other States were strong in proportion to their membership, and if the influence of the Arkansas Association was to be developed it must come through a larger and more enthusiastic membership.

President Pittman also made a few remarks on the subject, in which he impressed upon the delegates the importance of assisting the secretary in his work of increasing the effectiveness of the association.

#### Implement and Vehicle Dealers Admitted.

The question of admitting implement and vehicle dealers as members was brought up, and after a full discus-

sion a motion was adopted that "all implement and vehicle dealers who do a strictly retail business be admitted to membership in this association."

#### WEDNESDAY EVENING SESSION.

The evening session was inaugurated by the reading of an interesting paper on the subject of "Benefits of Organization," by C. J. Kramer of the Retail Grocers' Association.

#### M. L. Corey's Address.

M. L. Corey, the National secretary, addressed the delegates as follows, his topic being "The Benefits of Organization Among Retail Hardwaremen."

The subject assigned me has been so thoroughly explained at conventions and through our trade papers that it would seem nearly every point had been covered and no argument should be necessary to prove organization of retailers not only an advantage, but a necessity.

I will leave to others the pleasant privilege of noting the glitter and glamour of business changes and methods. What I may say may sound like a discordant note, but it is well to examine some of the changes that are now being made in the business world and see if they are really progressive and of general benefit.

Members of associations who realize most forcibly the advantage of standing loyally by one another often wonder why all retailers do not join us. There are many merchants whose minds are centered entirely upon making money; in the wild struggle for wealth the end justifies the means; those who are successful are very often honored and given credit for qualities they do not possess. This has been the history of the past, but it is particularly true of a certain class of merchants to-day.

#### SELFISHNESS AND GREED

predominate in their business methods, and the direct making or saving of a dollar causes them to become slaves to their occupation, in some cases even to deny the comforts and conveniences of a pleasant home; they refuse to donate for general or community enterprise, but are always ready to accept and take advantage of such benefits at some one else's expense; they are too narrow to recognize their brother dealer as a friend, and too suspicious and smart to enter into any local arrangement that promises mutual advantages; they are usually price cutters and brimful of unprincipled tricks.

Sometimes this class seems prosperous, sometimes they drag along year after year until the sheriff or undertaker winds up their business career; if their influence was entirely confined to their own store room we would not call your attention to their existence; it is a fact, however, that a firm operating on these selfish lines affects the business principles and methods not only of their community, but surrounding towns as well; one demoralizing action calls for retaliation and the war is on; confidence and friendships are shaken and often forever lost.

If perchance by any accident such a firm should join a business association they would soon discover they were out of their natural element and would never pay their second year's dues; this class of so-called business firms exists in nearly every community, and to them we must charge the fact that associated effort is not more universally recognized and loyally supported; we have not entirely given up their conversion, many of them read and think and begin to realize the true situation, and how weak and small one firm really is, one step further and they can see the tremendous influence united business men can wield and the conditions that demand our combined opposition.

The common sense view of these questions is growing stronger every day, many firms only need a word to influence them to cast their lot with us; therefore upon each member of our associated family rests a duty and an obligation to see to it that we meet this requirement energetically.

The character of the dealers who have originated, supported and firmly established State associations are in striking contrast to the description already given. Look over any or all of our State conventions and you will find them composed of successful, energetic, pro-

gressive, broadminded. Hardwaremen, with whom to affiliate is an honor and a privilege; men who have contributed liberally, both money and time, to carry to success a movement calculated to benefit every retail dealer alike.

Not only this, upon the success and prosperity of the retail merchant depends the future of our beautiful towns and villages and upon their continued growth and improvement depends the price of farm lands and the desirability of rural life. Our country has become great, rich and prosperous because of the wide distribution of financial benefits, its individual changes—changes for successful business enterprise, and the loyal support of home institutions and local merchants by all members of a community.

#### THE MODERN DEPARTMENT STORE

must stand responsible for many business and moral wrecks, but in the increased number and apparent financial success of the mail order and catalogue houses lies the paramount danger to individual and local enterprises to-day; no one can deny that their success depends entirely upon their deluding the buyer with their special price leaders, their hypocritical professions of honesty and their systematic effort to awaken distrust and suspicion against the local retailers in the minds of the buying public; to accomplish the latter purpose they advertise liberally in cheap magazines and periodicals, and continually have anonymous articles printed in them advising their readers not to submit longer to local robbery; they have tried to bribe postmasters and railroad employees to act as their agents, and now an investigation in the Postal Department of these United States (which has heretofore been above suspicion) reveals the fact that they have planned to use the great Rural Free Delivery System as a sort of silent partner, and we call your attention to only one instance leaving you to form your own conclusions.

Much has been said about the Parcel Post Bill. I think you understand its provisions; it is the most dangerous enemy that has ever faced retailers, and should arouse and unite every mercantile influence outside of mail order channels, the grocer, dry goods man and other lines are equally interested, and I hope, through our various associations, we can all get close together and present a united front to a common foe.

#### CO-OPERATION OF RETAILERS AND JOBBERS.

The National Association is making a strong effort in this direction. About three weeks ago the Executive Committee and officers of the National Retail Association held a three days' conference with a like committee from the National Jobbers' Association in the city of Philadelphia on the invitation of the latter body. The results of this meeting being of a confidential nature I am not at liberty to speak even at a gathering like this. I will say to you that I consider it one of the most important meetings we have ever held, and promises best results. Right here we want to say to you further that we believe we can safely rely upon the sincere assistance and co-operation of this powerful body, and were all the jobbers members, many of the troubles of which we complain could be adjusted and manufacturers could control and regulate their products and prevent the demoralizing prices made by mail order people by shutting off their supply when necessary.

#### THE WORK THAT THE NATIONAL

has laid out will require more money than is furnished by our State dues, it costs something to go after and secure certain results, it is expensive to watch and oppose injurious legislation, to attend State conventions, to assist in organizing new States, &c. So we adopted the plan of issuing a National Manual, I suppose you all received a copy. The manufacturers who patronized that book expressed their sympathy and desire to assist; you should remember them in selecting the goods that make up your stock, you should write them expressing your appreciation and saying you are selling their products. In this way the book can be made to contribute materially to our future success. This is a

very important matter, we ask you as loyal members of the Arkansas Hardware Association to remember this request, write these manufacturers, say you saw their advertisement in the National Manual.

We must exercise the same caution in carrying forward our association work that a good business man uses in his own personal affairs. We must regard as sacred any confidential arrangements entered into with outside parties, we must not attempt or allow advertising of results. We feel that we have lost much in the past by not being more particular in this respect. As loyal members of our State associations you must have confidence in your officers and in the ability to serve you well. You have a most important part, however, in this movement; you are on the ground; you are our sentinels so to speak, and it is your duty to report every move that you may discover that threatens your or our general interest; you can assist materially in securing new members; you should watch carefully your own trade and work with your fellow merchants to see that your customers' wants are supplied in your home town; you should encourage your local home paper and enlist their aid in building up home pride and showing up the true inwardness of mail order methods; you should watch your rural free delivery and see that it is not used as a tool by this unprincipled foreign competition; you can introduce improvements in your store methods; you can influence your Congressman to defeat injurious legislation; you can uphold and encourage your State and national associations; last, and most important of all, you should recognize and maintain your individual loyalty and responsibility always and everywhere.

#### Relation of Jobber to Retailer.

G. H. Lyon of the Dickinson Hardware Company, Little Rock, Ark., next addressed the gathering. Mr. Lyon spoke as follows on the "Relation of Jobber to Retail Dealer":

The relation between the jobber and retailer is an interesting study, but must necessarily include the manufacturer. The result of my thoughts on the subject is that all are an absolute necessity to the successful existence of each other.

The jobbers' main relationship to the retailer is promptness and convenience, and this double point is his only excuse for living. There could be no jobber without the retailer, and the retailer would find it very awkward without the jobber, for he cannot afford to send away down to Boston for 6 dozen Double Pointed Tacks, or to Cleveland for ½ dozen Twist Drill Bits, although if any of you are in the market for 500 dozen Double Pointed Tacks and 50 dozen Twist Drills you will find numerous factories willing to accept the order direct.

The door is not closed to you to buy direct; you all know how the catalogue houses have found open arms from the manufacturer. It is quantity only that makes jobbers—in the eyes of the factory. It is purely and simply volume that marks the line. So if your business is large enough to divide it up in all lines, and the manufacturer agrees with you, then you are a jobber and your troubles will have just begun.

#### SEDUCTIVE PRICES.

But the good judgment of the retailers will not allow themselves to be carried off their feet by the alluring prices to the quantity buyers, by taking on gross lots when dozen lots will suit his capital and demands much better. You cannot do without the jobber. If you should "resolute" here to-day to exterminate all of them others would rise up all over the land, simply because the retailers demand and sustain them. You must have a source of supply nearby. You make your money on what you sell and deliver, not on what you have en route, or on what you bought at a bargain and was not shipped till the season was nearly over.

As a buyer for a jobbing house, I often envy the retail buyer, for he can telephone the Jones Hardware Company to-day for some standard item and instruct them if they haven't got it to tell the Smith Company to ship it that day, sure. The next morning he has the invoice and the goods. In contrast I will state that last May I telegraphed a "rush" order to a factory for some Saws. We received the invoice in November and the goods

should have reached us in December, but were lost in transit. They were routed via "Water and Rail." The versatile freight man said, by way of consolation, that if they had been routed all rail they could have gotten quicker action on the movement, but could not promise when he could now get them from the bottom of the sea.

Pardon this little old story, but it fits the railroad tracer so well: A liquor dealer in New Orleans shipped a barrel of whisky to El Paso, Texas; en route the bung came out and the whisky was lost. The consignee started a hurry tracer for the whisky. Finally a boy brought a large bundle of papers in, the last page saying, "The barrel reached El Paso, but was empty." He then made claim, the papers took the back track, with new indorsements to the chief clerk. When he saw that the whisky was lost he pigeonholed the claim. The shipper got after the matter again, and the claim man dug out the claim and sent it again to the agent at destination and asked how the matter stood now. The agent wrote on the bottom: "Still Empty," and returned the papers.

#### IT IS THE JOBBER'S PROVINCE

to assemble the thousand items from as many different sources and distribute them through the retailer. You have troubles enough already without adding thereto the terrifying task of buying each item only from the man that makes it. I have in mind two retailers that started many years ago, who bought one-sixth dozen Pliers of each size, instead of a box of each; they succeeded mainly because they did not overstock themselves on stuff that was not in demand every day.

You can double your business on the same capital by buying one-half the quantities you now do, and putting that much money in other kinds of goods. Suppose you bought 12 dozen Galvanized Tubs for \$60; they would last you for six months. Why not buy \$30 worth of Tubs and \$30 worth of Pails? Then you would sell in three months and make the same profit. You may have learned this long before I did, but I did learn it "out of a book."

In concluding I shall say that the jobber is simply a convenience for the benefit of the retailer (incidentally some profit to himself), and the interests of both being mutual, the relations are harmonious and there should be no cause for strained conditions.

James T. Newell of *The Iron Age* was called upon and briefly addressed the meeting.

Mr. Corey complimented the members for the extreme cordiality existing between them. It showed the right spirit, each member working one for another, for the furthering of their association, for the maintenance of a harmonious feeling. The relations of all business men should be mutual; they are all working for business, and the greater the fellow feeling the better it will be for the advancement of each other's interest. He was glad to see such a spirit existing in Arkansas in general. The man across the street is working for business as well as you, and he will remain in business just the same if you fight him as if you courted his friendly feeling. Besides, a friendly feeling should always exist in order that all concerned might be the more successful. Don't cut and slash. Mr. Corey then asked the members if any of them had local business men's organizations. Several of them responded in the affirmative. He said that he believed one of the best methods that retail merchants could encourage is local organization. It will make your customers more honorable, and it is the best collecting agency that has ever been put in operation. It has always proved a universal success. It is such a great thing in the matter of credit and in the collection of debts. If a merchant has a bad account he reports it to the organization. In that way you are enabled to make better collections and sustain less losses.

Mr. Pittman stated that at Prescott in their business Men's League a bad account was reported to the secretary of the league, who made a note of it on his record book. It was thought to be much better to keep continually after a debt so long as there seemed to be any hope of collecting it yourself than to place the account in the hands of a lawyer or collecting agency and allow it to be brought into court and probably cost more money than the account was worth. An organization of business men who would aid each other in giving out in-

formation about bad accounts was regarded as the most successful and satisfactory method.

#### THURSDAY MORNING SESSION.

The first business of the Thursday morning session was a paper by W. M. Graham of Clarendon, who entertained the members with an address entitled "Chips and Whetstones." Some admirable papers we are unable to give in this issue on account of the pressure on our space.

#### Officers 1903-1904.

The Nominating Committee recommended the following for officers for the ensuing year:

PRESIDENT, J. F. Maxey, Ozark.

FIRST VICE-PRESIDENT, Hamp Williams, Hot Springs.

SECOND VICE-PRESIDENT, Alex. L. Skillern, Nashville.

SECRETARY-TREASURER, C. E. Taylor, Little Rock.

EXECUTIVE COMMITTEE: C. T. Rosenthal, Batesville; T. B. Stewart, Newport.

REPRESENTATIVE TO THE NATIONAL CONVENTION, C. E. Taylor, Little Rock; Alternate, E. E. Mitchell, Morrilton.

The report was adopted by unanimous vote.

#### Resolutions.

Mr. Taylor presented the following resolution, which was adopted:

*Resolved*, That the thanks of this association are tendered to the *Democrat* and the *Gazette* for full reports of this convention, to Houcek & Co. for the use of their hall, to the Ouapaw Club, to the Concordia Association, to the Board of Trade, to Fones Bros. Hardware Company and to W. W. Dickinson Hardware Company for courtesies extended, and to the railroads for reduced rates.

Resolutions of thanks to Mr. Corey for his presence and assistance during the convention and to *The Iron Age* for sending a representative were also adopted.

#### Vote of Thanks to Secretary.

A unanimous vote of thanks was extended to Mr. Taylor for his very efficient work as secretary.

#### Question Box.

The Question Box was next taken up and discussed as follows:

1. *Is it good business to loan or borrow from your competitor?*

All expressed the opinion that it was bad policy to loan or borrow from a competitor. If a competitor comes to borrow, let him have and charge it to him. To loan causes the borrower to become careless, and when he gets nearly out of a certain line of goods he will wait a little longer before ordering, because he knows he can get it from his competitor.

2. *How would you go about getting a list of the names in a country where you are unacquainted?*

Mr. Williams said he would write to the County Clerks of the different counties and get them to send them a list of all the taxpayers, whether their property was mortgaged, and tell him who the mortgagee was. Another would be to get the names from the country newspapers.

3. *Does it pay to manufacture your own Stove Pipe? What does your Stove Pipe iron cost you? How much does each joint cost to manufacture?*

Mr. Maxey said that it was cheaper to manufacture your own Pipe. He would make it out of No. 27 iron, about 2 pounds. The making of Pipe costs about 1 cent a joint. As to the price of iron, you have to take the market prices, average about \$3.25. You will find that you can make your Pipe for about 1 cent a joint less than you can buy it. He thought it well to keep some made up Pipe for emergency cases, in case a customer insisted on the ready made. But a customer could be convinced that the Pipe you made yourself is just as good as the bought Pipe.

4. *How often has it paid you to bring suits to collect a debt, and how often have you lost by it?*

W. A. Jackson said he had been in business eight years and during that time he had sued three parties

and was successful in collecting with one exception, and this was caused by a little carelessness on his part. Was always very successful in collecting his debts by looking after them closely without having to bring suit. The majority of the members thought it best to wait as long as possible before bringing suit to collect a debt.

#### Standing Committees.

After short addresses by retiring President Pittman, President-elect Maxey and Mr. Corey, the following standing committees were appointed by the new president:

**MEMBERSHIP COMMITTEE:** J. M. Pittman, Prescott; J. B. Avera, Paragould; J. A. Dean, Portland; W. V. Hamilton, Clarksville; F. B. Gregg, Little Rock.

**PROGRAMME COMMITTEE:** R. F. Roys, Russellville; J. L. Davis, Magnolia; J. P. Simpson, Malvern.

**TRANSPORTATION COMMITTEE:** J. H. Morgan, Camden; John H. Bolcourt, Little Rock; Albert Benish, Hazen.

**GRIEVANCE COMMITTEE:** W. R. Brown, Corning; P. J. Tidwell, Buckner; C. B. Winbourn, Coal Hill.

**FRATERNAL COMMITTEE:** E. P. Garrison, El Dorado; J. B. Hurley, Warren; W. A. Jackson, Dardanelle.

#### CONVENTION NOTES.

The Fones Bros. Hardware Company and the W. W. Dickinson Hardware Company were responsible for a very pleasant afternoon's entertainment for the members. The arrangements included an extended ride about the city on a special car, and also the witnessing of the baseball game between teams representing Little Rock and Birmingham. These concerns in other ways also did much for the pleasure and comfort of the visitors, and their attentions were much appreciated by the visitors.

An incident which afforded much amusement to the members assembled was the selection of E. E. Mitchell of Morreltown and Hamp Williams of Hot Springs by the ladies of Little Rock as judges of a baby show. While there was no doubt in the minds of the members of the association that the judges discharged their hard duties in a straightforward and creditable manner, yet from all accounts they had a hard time smoothing matters over with many of the mothers whose babies did not come up to the prize winning standard according to their judgment.

Besides the delegates, the following were present at the convention:

Bridge & Beach Mfg. Company, St. Louis, Mo.

W. A. Cook, Norvell-Shapleigh Hardware Company, St. Louis, Mo.

Frank Cook, Fones Bros. Hardware Company, Little Rock, Ark. William Barnes, W. W. Dickinson Hardware Company, Little Rock, Ark.

G. H. Lyon, W. W. Dickinson Hardware Company, Little Rock, Ark.

E. W. Horn, Thomas, Barnes & Miller, Memphis, Tenn.

E. W. Farley, John Deere Plow Company, St. Louis, Mo.

James T. Newell, *The Iron Age*, St. Louis, Mo.

#### FITCHBURG HARDWARE COMPANY.

**THE FITCHBURG HARDWARE COMPANY** is the title of a new concern which is to take over the business of the principal Hardware houses in Fitchburg, Mass. Incorporated under the Massachusetts State laws, this new concern will have a paid in capital of \$200,000, and will be a consolidation of the Damon & Gould Company, E. N. Cummings & Co. and B. A. Cook & Co. The Fitchburg Hardware Company will begin business July 1, with the following officers: N. B. Damon, president; E. N. Cummings, vice-president; B. A. Cook, secretary, and R. D. Gould, treasurer. Damon & Gould Company and E. N. Cummings & Co. are both old concerns, and for the past ten years have come in close competition in the jobbing trade. Both houses have had a strong wholesale business, and have been recognized as two of the best local jobbing concerns of New England. B. A. Cook & Co., although a younger firm, have built up an extensive re-

tail trade. The consolidation will bring about many economies in buying, and with the larger stock and greater capital the Fitchburg Hardware Company will be enabled very materially to increase their wholesale business. The success of the company seems assured, as the same men who have successfully built up the consolidating concerns are associated in their management.

#### COES WRENCH COMPANY'S NEW WRENCH.

**THE COES WRENCH COMPANY**, Worcester, Mass., whose sales agents are J. C. McCarty & Co. and John H. Graham & Co., New York, announce that owing to unforeseen and unavoidable delays in the delivery of material, as well as embarrassment caused by fuel changes, as a result of the recent coal strike, they have been obliged to postpone the introduction of their new Steel Handle Wrench, made with a patented semisteel handle, requiring new tools, &c., in its production. Although they now have a limited quantity of some of the smaller sizes ready for distribution, they have decided to keep the whole matter in abeyance until the remaining sizes can be got under way. This matter has also been complicated by the large demand for their regular Knife Handle Wrench. In connection with their 26-inch model, designed for heavy duty and large nuts, they announce that a few of the Wrenches will be ready on or about July 15, and the 30-inch size reasonably soon after that.

#### BELKNAP HARDWARE & MFG. COMPANY

**THE** directors of W. B. Belknap & Co., Louisville, Ky., have decided to change the name of the concern to the Belknap Hardware & Mfg. Company. This change was determined on when the company recently extended its charter, increased its capital to \$2,500,000 and decided to manufacture Harness. The company have been engaged in the manufacture of various light Hardware for some time, and, with the enlarging of this department, it was decided that a change in name which tells something of the nature of the business engaged in would be advisable. The firm was established in 1840. The officers remain unchanged. While the disappearance of a name which has been honorably conspicuous in the Hardware market for many years will be regretted, the change which has been made will be recognized as an evidence of the spirit of enterprise and progress which has always been characteristic of the great house of W. B. Belknap & Co.

#### COLORADO RETAIL HARDWARE DEALERS ASSOCIATION.

**A MIDSUMMER MEETING** is announced by the Colorado Retail Hardware Dealers' Association at Colorado Springs, Col., July 7 and 8, the headquarters being at the Alamo Hotel. On the 9th inst. the members of the association will join the lumber dealers in an excursion to Cripple Creek. W. P. Bogardus, president of the National Association, will be present, and a very interesting and profitable meeting is expected. Matters of importance to the Hardware merchants of the State will be discussed, and it is hoped that there will be a large attendance of Colorado merchants, whether members or not. A rate of a fare and a third has been secured if sufficient dealers make the trip. F. C. Moys, secretary-treasurer, Boulder, will be pleased to furnish any information desired in regard to the gathering.

On the morning of June 11 the plant of the Pullman Mfg. Company, manufacturers of Hardware Specialties, Rochester, N. Y., was entirely destroyed by fire. Within two hours new offices had been rented and raw material ordered, and within 24 hours a fully equipped running plant was purchased, so that there will be no delay in filling orders, as all patterns, &c., were in the foundry. This characteristic enterprise and energy on the part of the company will doubtless be appreciated by their customers.

## New England Iron and Hardware Association.

THE annual meeting of the New England Iron and Hardware Association was held at Young's Hotel, Boston, Monday, June 15, at 6 p.m. Officers for the ensuing year were elected as follows:

PRESIDENT, Harry W. Waite.

VICE-PRESIDENT, George B. Dexter.

TREASURER, Charles H. Breck.

CLERK, John T. Boyd.

These, with Oscar Shepard, Wm. Chamberlain, Chas. F. Bragg, Albert C. Ashton, Edward P. Sanderson and Wm. P. Hill, comprise the Board of Directors.

The reports of committees were received, but beyond that no business was transacted, the Committee of Arrangements having planned a celebration of this the tenth anniversary of the organization of the association. No formal addresses were made and reports of committees were presented in synopsis only, making the business part of the meeting very brief. Music was furnished during



HARRY W. WAITE, President.

the dinner by Odell's Orchestra. An entertainment, comprising vocal and instrumental solos, &c., followed the dinner.

The association is in a flourishing condition and this meeting was a highly enjoyable social occasion. The dinner was of unusual length and excellent, and the celebration was entered into with spirit by all those present.

A pleasant feature of the evening was the presentation of a handsome gavel to the retiring president, Oscar Shepard, by the members of the Wooden Ware department of the association. The gift was presented by H. N. Lathrop.

Each guest also received an envelope containing eight souvenirs, representing each department of the association, as follows: General Hardware, miniature Wrench and Lock; Heavy Hardware, small Tire Bolt; Metals, small square of Tin; Paints and Oils, small Paint Brush; Steam Gauge, seal purse; Wooden Ware, box of tooth-picks; Saddlery, rosette.

### Clerk's Report.

The annual report of the clerk of the association was as follows:

Since the last annual report read at the meeting of June 18, 1902, at Young's Hotel, Boston, at which the attendance was 32, the records show the association has held its regular meetings during the third week of each month as follows:

July. No meeting, by agreement of stockholders.

August. No meeting, by agreement of stockholders. September 16, 1902. Point Shirley Club, Boston Harbor. Attendance, 66. This meeting was largely a social one, no business of importance being considered.

October 22, 1902. Young's Hotel, Boston. Attendance, 62. The speaker of the evening was T. James Fernley, secretary-treasurer of the National Hardware Association, who spoke on "The Abuse of the Cash Discount System."

November. No meeting, by agreement of the stockholders on account of the absence of many in attendance at the annual convention of the National Hardware Association at New Orleans.

December 26, 1902. Young's Hotel, Boston. Attendance, 28. The speaker of the evening was General Edgar R. Champlin.

January 27, 1903. Trade Club, Boston. The speaker of the evening was James Lewis Cowles, and his discourse, "The Possibilities of the Post Office." Attendance, 51.

February 18, 1903. Tiffin Club, Boston. Attendance, 42. The speaker of the evening was Hon. Robert Luce of the Massachusetts Legislature, whose address was on "Fair Play in Politics."

March 31, 1903. Annual dinner, Hotel Vendome, Boston. Attendance, 117. The speakers were Arthur W. Dolan, president of the Common Council of Boston; Hon. James J. Myers, Speaker of the Massachusetts House of Representatives; Charles A. Bartlett, attorney at law; General Edward Anderson, D.D. The addresses were of an informal character, and the guests of the association were the speakers above named; Charles E. Adams, president of the Massachusetts State Board of Trade; Frank Dickerson of the American Tin Plate Company; T. James Fernley, secretary-treasurer of the National Hardware Association, and Walter C. English of *The Iron Age*.

April. No meeting, by agreement of the stockholders on account of Patriot's Day falling in the third week of the month, and no speakers being available.

May 21, 1903. Young's Hotel, Boston. Attendance, 29. The speaker of the evening was M. J. Murray, and his subject, "The Business Man and His Relation to Good Government."

There were, therefore, eight meetings during this year instead of ten as last year, the highest attendance being 117 at the annual meeting; the largest attendance at a monthly meeting was that of September 16, when 66 were present; the lowest attendance was 28 at the meeting of December 26.

The Board of Directors have held their regular bi-monthly meetings, as provided for in the by-laws, except in the summer months of July and August, and during the year they added to the membership roll the following names, upon approval and recommendation of the Membership Committee, being 14 in all:

National Steam Specialty Company, Chicago, Ill., May 21, 1903.

H. Belfield & Co., Philadelphia, Pa., December 15, 1902.

American Steam Gauge & Valve Mfg. Company, Boston, Mass., December 15, 1902.

The Ashton Valve Company, Boston, Mass., December 15, 1902.

Star Brass Mfg. Company, Boston, Mass., December 15, 1902.

Standard Gauge Mfg. Company, Syracuse, N. Y., December 15, 1902.

James P. Marsh & Co., Chicago, Ill., December 15, 1902.

Schaeffer & Budenberg Mfg. Company, Brooklyn, N. Y., December 15, 1902.

Ashcroft Mfg. Company, New York, N. Y., December 15, 1902.

Utica Steam Gauge Company, Utica, N. Y., December 15, 1902.

Phoenix Horse Shoe Company, Poughkeepsie, N. Y., December 15, 1902.

J. F. Parkhurst Sons & Co., Bangor, Maine, August 6, 1902.

White Mountain Freezer Company, Nashua, N. H., November 18, 1902.

Fairbanks Company, Boston, Mass., January 20, 1903.

All of the foregoing, with the exception of the Phoenix Horse Shoe Company were made active members and stockholders, the above named company being eligible as associate members only, and during the year the following resignations were accepted:

Bryden Horse Shoe Company, June 18, 1902.

Geo. P. Bullard & Co., August 6, 1902.

Burgess, Forbes & Co., September 16, 1902.

N. E. Butt Company, July 1, 1902.

M. C. Winsor & Co., May 19, 1902.

The association lost by death the following members:

Wm. F. Chapman of Berry Bros., Limited.  
Geo. H. Chadsey, Providence, R. I.  
Brice Edwards, Edwards & Walker Company, Portland, Maine.  
John D. Morton, Carpenter-Morton Company, Boston, Mass.  
John H. Coffin, John H. Coffin & Co., Boston, Mass.

The present membership of the association consists of 108 stockholders and eight associate members, making 116 in all.

It is with pleasure that it can be reported the general business of the association is still constantly increasing in all of its departments, being even greater than for the previous year. The full extent of this will be given in the reports of the treasurer and Bureau of Credit and Collection and by the chairman of the departments.

The system of classification of expenses adopted some time ago is still continued, and shows that the expenses for the year have been less proportionately than for the year previous, notwithstanding office assistance necessary for the proper conduct of the business of the association.

The work of the past year has demonstrated to the satisfaction of the Board of Directors, and it is hoped to the members as well, the usefulness of the association's organization, and in view of the changes made in the Bureau of Credit and Collections, it is hoped that greater use will be made of the facilities of the same during the coming year than we had during the past.

The reports of the General and Heavy Hardware, Woodenware, Saddlery and Paint and Oil Committees will be read by their respective chairmen, and will be attached to this report as forming a part thereof.

The Steam Gauge Committee, having been organized only very lately, are not this year in a position to make a report of the work of their Department.

The Board of Directors desire that names of all houses eligible to membership in the Association should be presented to it for consideration, with a view of still further increasing the membership, provision for this growth having been made by the stockholders adopting the recommendation of the Board of Directors to increase the capital stock of the association.

It is proper to call the attention of the stockholders to the necessity for securing in the near future larger quarters for the general office of the association. The present office of the association is much too small for the proper conduct of its business. The meetings of the board and its committees frequently interrupt the regular conduct of the office work by reason of having to occupy the large room. The Board of Directors are considering what can be done to advantage in the direction of getting increased accommodation, and at the proper time will report to the stockholders the result of their investigation.

#### The New President

of the association, Harry W. Waite, is a member of the firm of Waite, Ranlet & Co., importers and dealers in metals at 80 Broad street, Boston. He has been connected with the trade since 1887, and with the present firm since March, 1900. He has always been actively interested in the work of the association, and was vice-president last year.

#### INCORPORATION OF WEED & CO.

**W**EED & CO., Buffalo, N. Y., have been recently incorporated under the same name with an authorized capital stock of \$350,000 which has been taken by various individuals connected with the business. The officers are Hobart Weed, president; James R. Smith, vice-president; Shelton Weed, secretary and general manager, and Walter I. Weed, treasurer. The directors consist of the names mentioned above and F. Max Hill. The following gentlemen, who have been connected with the house for various periods, ranging from 7 to 15 years, have on account of their faithfulness, loyalty and ability been given an opportunity to become stockholders, viz.: C. E. Woepfel, John W. Harris, L. C. Davenport, S. L. Carhart and F. Max Hill. This well-known house, one of the oldest and best in the State, will doubtless hold its popularity and success in this new departure, which is so consonant with the tendencies of the times.

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## BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE,  
NORFOLK ST., LONDON, W. C., June 6, 1903.

### The Week's Hardware Trade.

**A**S is always the case in weeks broken by holidays, both the wholesale and retail branches of the Hardware trade have been quiet, and the quietness seems the more pronounced, coming as it does after the little spurt referred to last week. The average amount of business done over the fortnight has been, however, probably maintained. Birmingham complains that while trade in the heavy sections remains fairly steady, the lighter branches are distinctly dull. On the other hand Sheffield reports an improvement in the lighter sections (in Cutlery and electro plated goods in particular), but complains of dullness on the heavy side. Reports from this center state that the demand for Field and Garden Tools has been considerably below the average. The stocks which accumulated in the winter were fairly exhausted at the opening of the season, but there has been no call from the country districts for fresh goods to anything like the extent it was expected. The unseasonable weather militated against buying at the very time implements were required, and there appears to have been no improvement since, when more favorable conditions set in. The home requirements in agricultural machinery have also been less than in former seasons.

There is nothing startling in the way of an improvement to report from the Lancashire district. Manchester correspondents, however, state that the brief run of summer weather has brought with it quite a brisk demand for garden and horticultural lines, and also in Sporting Goods, such as Golf, Cricket and Croquet Requisites. The principal firms in this district who make a specialty of these goods are just now working their hardest to meet the requirements of customers, orders having come in with quite a rush during the past few days.

There is nothing of any particular interest to report this week in connection with Hardware material.

### "Cornering" The Incandescent Mantle.

Hardwaremen have done good business on this side during recent years in Incandescent Gas Fittings, but which, in the future, may be largely influenced by the supply of Mantles. Within the past 12 months the price of thorium, which forms the basis of the Incandescent Gas Mantle as now manufactured, has gone up considerably. Twelve months ago the price was 28 marks per kg., now it is 45 marks per kg., or almost double. Most of the thorium that is used in Incandescent Mantle manufacture is obtained from deposits of monazite sand in Brazil. From that country it is shipped to Hamburg, and there, it is alleged, it is "cornered" in the interests of the larger firms of manufacturers in Germany. The Incandescent Mantle has come down very much in price within the past two or three years, and if further reductions are to be possible it is necessary to thwart the ring that has been formed. It is now stated that steps are being taken with a view to the accomplishment of this object, and I learn that the Board of Trade is, through its intelligence department, giving its assistance in the matter.

### Trade Openings in China and Japan.

The importance of Hardware and Machinery exporters keeping a close eye to the requirements of China and Japan has been emphasized in these columns on more than one occasion. A private correspondent in North China now writes that, in the midst of the political rivalries of Great Britain, Russia and France, it is Germany that is reaping the tangible rewards of commercial enterprise as far as the Chinese Government is concerned. Orders are being given for Rifles and Cartridges, Arsenal Material and Machinery for the manufacture of many items of military equipment which 20 years ago it would have been deemed madness to attempt to make out of Europe. These contracts are almost exclusively being given out to German firms, although in some instances the material itself is ultimately procured from English factories. The significant feature, however, is that without any direct intervention on the part of their diplomatic agents, and by the exercise of

persistent energy, German traders are securing the results which our commercial representatives sometimes assert are being lost to this country because of the alleged insouciant attitude of the British diplomatic and consular service.

It is of interest also to mention, in connection with Eastern trade, that advices and inquiries which have reached London from an official quarter in Tokyo indicate that the Japanese Government proposes shortly to place on order some 50 electric locomotives for short distance lines. Official Japanese engineers have, it is understood, reported to the Mikado's Government in favor of electricity as the motive power on all lines up to 100 miles in length, and the ordering of the 50 locomotives referred to is the first official move in this direction.

### Trade with Vladivostok.

There would appear to be a virgin market for manufacturers not only for general goods, but for Hardware, particularly at Vladivostok. According to a report from the British commercial agent there up to the present very little attention appears to have been paid by British manufacturers to Eastern Siberia. Notwithstanding the sparse population east of Lake Baikal, there are 10,000,000 people to be supplied; they are getting more and more civilized, and are now requiring many luxuries which can be supplied by British manufacturers. There are large wholesale and retail houses in existence, and British manufacturers are recommended to get into touch with these. Germany commands the market for most imported articles at present, the United Kingdom being chiefly represented by Galvanized Iron, Iron and Steel Bars, Plates, Wire Nails and Coal. The imposition of the Russian duties has entirely put a stop to the importation of fancy articles, woollens, prints, &c., and very much decreased the imports of canned goods, which formerly came mostly from the United Kingdom. Regarding the openings for British trade, Mr. Schwabe directs attention to machinery for mining purposes, which is duty free, except American, that being subject to 40 per cent. duty; brick presses, brick building proceeding rapidly; bricks, fire bricks (for those at present imported as much as £10 per 1000 is charged, while the local fire brick is sold at £4 per 1000); fancy tiles, for paving shops and halls (at present these are supplied by Germany); Builders' Ironmongery, Carpenters' and Blacksmiths' Tools, Galvanized Iron (this all comes from the United Kingdom); Coal and Light Railway Machinery. There is also a good demand for Firearms, especially Shotguns, but it is the name that sells; the Americans have made a specialty of this trade and a good stock of American Guns is always kept. It is of very little use sending catalogues or samples—what the Russians want is a good stock from which to choose, and they will then pay any price that is asked.

### Steel, Cutlery and Files in Spain.

There is much of interest to manufacturers of Hardware and kindred articles in the recent reports from the various parts of Spain. From one of these it is gathered that two principal classes of steel are imported into Bilbao—viz., crucible cast steel for tools at \$6.96 per hundredweight, which mostly continues to be imported from the United Kingdom, German competition in this article being almost entirely limited to direct sales to factories, very little being bought by dealers, and round and octagonal wrought steel for Mining Drills, almost exclusively purchased from Germany, at 32 francs per 100 kg. (\$3.08 per hundredweight). Sheffield Tools hold a leading place on the Bilbao market, but British Cutlery has no chance against that of German make, owing to the greater variety and choice offered by the Solingen cutlers, who will, it is said, supply special models for any given province of Spain. A current article in the Basque district consists of iron nickel handled Knives at 1 franc 75 centimes (34 cents) per dozen.

American Files are making their way into the Bilbao trade, "owing principally to the fact that 70 per cent. discount is allowed," and prices are quoted free Bilbao. Their lightness also offers an advantage, owing to the high customs duty, levied by weight. As a set off British

Files, while heavier, have more metal and better temper. Files of native manufacture are inferior in quality and have failed to secure popular favor.

In the important articles of Nuts, Bolts and Screws Belgium and France have the monopoly. British Screws are not considered in Bilbao to be as well finished as the Continental, and the decimal sizes are said to offer greater variety of selection. A fact which tells perhaps most of all in favor of the Belgian and French trade is that these countries produce other articles in addition to Screws, and Bilbao dealers find it convenient to order more than one commodity from the same firm. British Screw makers as a rule limit their business to that single article.

#### C.I.F. or F.O.B.

An interesting discussion is at the present time taking place in South African circles as to the wisdom or otherwise of quoting c.i.f. (cost, insurance and freight) or f.o.b. It may be remembered that B. H. Morgan, one of the commissioners sent out to South Africa to report upon trade prospects, emphasized the importance of through freight quotations. It would seem that considerable difference of opinion exists as to the wisdom of through quotations, and that, as a matter of fact, the preponderating weight of opinion in South African circles favors quotations f.o.b. F. J. Middleton, chairman of Middleton's Bedstead Company, Limited, of Birmingham, who has a good connection with South Africa and who is not personally antagonistic to c.i.f. quotations, states that his firm have for many years done a large business in South Africa, and never once in the whole course of their connection with that part of the world, extending over 25 years, have they been asked for a through quotation, nor has such a method of doing business been suggested to them. F. J. Middleton, speaking for his firm, says that if there is any desire that they should quote their goods through to destination they will do so, but they want to get at the actual mind of the buyer.

#### BUYERS DIVIDED.

The buyers are roughly divided into two sections, namely, merchants and those who buy direct for clients. It is obvious, however, that both merchant (wholesaler) and buyer have one interest in common, namely, the maintenance of their own function. If a system of c.i.f. quotation obtained it is just possible that retailers in South Africa might buy direct. I do not say this is so, but I think it is a consideration to be borne in mind in judging of opinions expressed *pro* or *con* in regard to this delicate question. Keep Brothers, the well-known export merchants of Birmingham, state:

#### C.I.F. QUOTATIONS EXCEPTIONAL.

As far as our experience goes, it is quite exceptional for South African importers to ask for c. i. f. quotations, except for special lines for Municipal or Government contracts. We have no doubt that most South African importers see quite clearly that if goods are quoted c.i.f. some addition has to be made to the estimated cost of freight to cover the probable contingency of weights (or measurements) working out at a higher figure than originally estimated; whilst by buying goods f.o.b. importers know that they are only paying freight on the identical weight (or measurements) of goods supplied.

#### VARYING CONDITIONS.

John Palmer, Jr., & Co., of Eastcheap, London, E. C., who are also well connected with South Africa, say:

A buyer in South Africa is generally satisfied with an f.o.b. quotation when the first cost is relatively high in comparison with freight and charges. If, on the other hand, he inquires the price of an article, the first cost of which is low but on which charges would amount to say 75 per cent. of the f.o.b. value, then it is obvious that the c.i.f. quotation is the only one which is of value to him. The calculation of c.i.f. prices is a function which rather belongs to the export merchant than to the manufacturer, provided the latter will undertake to quote f.o.b. and give the necessary particulars of weights and measurements.

#### AGAINST C.I.F. QUOTATIONS.

T. J. Simey, a prominent South African buyer, gives the following practical reasons against c.i.f. quotations:

After 45 years' experience of South African trade, including many years of indenting goods from England, as well as buying goods in England for shipment to South

Africa, I am decidedly not of opinion that firms in South Africa require goods quoted at prices to include delivery at destination. My reasons are: (1) Every practical man in business in South Africa who imports knows within a trifle what the importing charges are on the various descriptions of goods he indents when they are laid down in his warehouse. (2) It is more advantageous to the London Cape merchant and better for his client's interest that he should go into the open market for his requirements. As for quotations for delivery at works, or f.o.b. English port; he will be able to get these from most suppliers, whereas if the quotation is wanted for delivery at ports or inland towns 6000 miles or more away from manufacturer's works, at least nine-tenths of the home manufacturers could not possibly get the necessary information, and neither would many take the trouble to find out what the many different changes are, and consequently the chances are quotations sent in would stand in higher than if goods were bought in the usual way and shipped by his own agent from London or other home port. (3) I have, during all the 45 years I have been in business, no recollection of ever having asked for a quotation for goods delivered free to destination, nor since I have settled in England have I asked suppliers to quote me through rates, with the exception of an article like calcium carbide, and which, as it comes under the Explosives Act, and I cannot get it shipped from England by the Conference line of steamers, I find it more advantageous in my clients' interests—as I ship frequent parcels of from 5 to 10 tons at a time—to buy at a price to include cost of freight, insurance and delivery at such South African port as I may require.

#### AN INDORSEMENT OF THE MODERN METHOD.

So far the discussion would seem to go all one way, but Neale & Wilkinson, the well-known South African forwarding agents, deem through rates to be a distinct advantage. They say:

There is no doubt that the necessity of quoting prices, including delivery to the buyer, as against the old-fashioned method of f.o.b., is becoming more recognized, as the purchaser can at once see what the goods cost him delivered at his door, and he is free from the responsibility of freight rates and transit charges. We do not think, however, that it is generally known by the colonial buyer that manufacturers are willing to quote including delivery, and consequently it is not asked for. On the other hand, there are many manufacturers unaware of the means at their disposal to obtain through freight rates, and do not trouble. Therefore, in many instances, it is more a question of blissful ignorance rather than inability. For some years past we have been inducing manufacturers to adopt this system, and, judging from the volume of traffic we convey at through rates to all parts of South Africa and other countries, we can only conclude that where adopted it is much appreciated. The system should specially recommend itself to manufacturers who are asked to quote buyers in the Transvaal, Orange River Colony, and up-country districts in South Africa, and we think those manufacturers who quote including delivery to the buyer would be at a distinct advantage over those who only quote f.o.b.

I cannot help thinking that, inasmuch as the export trade with South Africa is largely in the hands of the merchants, strong objection is taken to through quotations because they have an undoubted tendency towards direct trading. More than one South African merchant or buyer has been quite frank on this point. One thing is clear, and that is that buyers want quotations either f.o.b. or c.i.f. It is a fact that even yet a number of old-fashioned manufacturers still quote free at works or f.o.r., or free docks, quay or alongside, but refuse to quote f.o.b.

#### Sewing Machines in South Africa.

There is a growing demand in South Africa for Sewing Machines. I regret I cannot give full statistics pointing conclusively to this fact, but I see that Natal last year imported Sewing Machines to the value of \$110,000, compared with \$55,000 in 1891. It is probable that this year the total imports reached \$300,000 into South Africa. British machines head the list, with shipments in 1902 to the value of \$220,000, showing an advance on the previous year of \$60,000. It would seem that there is an excellent opportunity for Americans to push this trade in South Africa.

#### GLEN MFG. COMPANY.

THE GLEN MFG. COMPANY, Ellwood City, Pa., manufacturers of Tree Guards, Fencing and Wire Specialties, have met with a very large demand for their products, and in order to accommodate their increasing

business are making some extensive additions to their plant. These consist of the erection of a main building of steel construction, 140 x 150 feet in size, and a japanning room, 40 x 50 feet in size. These buildings will be equipped with modern machinery and when completed will about double the output of this concern.

## THE TRAVELING SALESMAN HIS METHODS AND CONTROL

BY SAMUEL MASTERS.

### CHAPTER XXI.—SALESMEN AND THE MAIL ORDER DEPARTMENT.

**S**ALESMEN in most jobbing houses do not have any interest in the mail order portion of the business. Too often they have reason to complain that the mail orders are given precedence and that the customer can mail an order direct to the house several days later than the date he gave one to the salesman and will receive the mail order first. He also finds that orders are sent in by the customer for goods upon which he named prices and paved the way for a purchase, and yet he gets no credit for the sale. Occasionally the house will quote direct a lower price than he is allowed to give—at times because of special conditions as to quantity, and at others because the men in the mail order department become soonest aware of reductions in prices. In one known instance the sales manager tried to inaugurate a policy of keeping the prices through salesmen slightly higher than the direct mail quotations, claiming that the persuasive efforts of the salesmen should enable them to get better prices than those named in a cold, impersonal fashion in a letter; and that the reduced expense of mail solicitation warranted him in naming a lower price for business gained in this way. The experiment ended abruptly in a very short time, but the evil effects in the way of estranged relations between manager and salesmen lasted for years.

#### Profitable Business.

Naturally, the jobber likes to see a large business done in the mail order department, for the 60 per cent. of the gross profits which is paid on other sales to the men on the road stay in his possession, and the monthly footings of the cost clerks' accounts are carefully studied. Various plans are put in force to swell the mail orders. Order blanks are furnished customers; stress is laid upon the promptness with which hurry orders are executed; assurances are given that the prices will be as low as those quoted by the salesmen, and in all the correspondence and printed matter the impression is fostered that the mail order department will give the very bottom prices and immediate shipment; which it is generally able to do, as the men who handle the orders can see to it personally that there is no delay in shipment, and are in a position to get the very latest advices regarding prices.

#### The Traveler's Solitude.

Naturally the salesman resents any intimation that he cannot secure for his customers the very best service his house has to give, and uses his influence to induce the customers to hold orders until he arrives, or to forward them to him to be sent to the house. To this end he furnishes his best customers with a copy of his route, or advises them to send orders to his home address, where he will get them Saturday. For the same reason he advises his best trade by letter of important changes or impending advances, and strives to strengthen the friendly relations between himself and his customers, even though it be to the detriment of his employer's best interests. From his standpoint it is of vital importance that he secure the trade, and he has no interest in the business that goes direct, except to keep a jealous eye upon it and to see that none of the business that he can claim is credited to mail orders.

#### Diminishing Importance of Mail Orders.

While the jobber's appreciation of mail orders is as keen as in former years, it is to be noted that he relies

less and less upon them, and that by shortening the time between visits and in other ways increasing his salesmen's effectiveness he is lessening the relative importance of his mail business. There is many an establishment where the sales of a single good salesman will exceed those of the mail order department. In one establishment there are four times the number of salesman that there were ten years ago, with a correspondingly greater area from which to draw custom, yet the same number of men handle the mail order business that were required in 1893, and the business has assumed a distinctly pick-up character. Very few of the good orders for seasonable goods are received, and the most of the general business is given in person by country merchants visiting the city.

#### Crediting Salesmen.

In such an establishment it would pay the jobber to credit each salesman with all orders taken in his territory, whether taken by him or sent in direct by the customers, for his mail trade is evidently abnormally low, and is being sacrificed to the salesman's desire to swell his personal sales. If the jobber will adopt and enforce a rule forbidding salesmen to solicit orders by mail, and instructing them to urge customers to send orders direct without awaiting the salesman's advent, the mail orders will show a marked increase. If the salesman knows that he will get credit for all the business done in his territory he will urge the customer to send in his orders and become a defender of the mail order portion of the business. Many a merchant would rather send his mail orders to a house that will credit the sale to the representative that calls upon him, and upon an even basis in other regards such a house will get his business.

#### Disadvantages.

One of the evil effects of allowing salesmen to receive mail orders is seen at the time of sudden advances in staples, such as Wire and Nails, the notification of changes of prices on which is usually made by telegraph. In a great many instances where advances have taken place belated orders will be sent in by salesman at old prices "taken before the advance," or if prices decline the customer is given the benefit of a price made several days after his order was written. In a lesser degree the entire line of goods is affected in the same way, and profits correspondingly reduced.

It does not pay to have competition between two branches of the same establishment. It is weakening to the influence of both, and the jobber whose mail order business is now of small relative size will find one element of weakness removed if he will so consolidate his road and mail sales as to make it to the salesman's interest to push for a mail business, and the salesman can well afford to work for a reduced percentage if given credit for all the sales in his territory. The jobber can easily figure a percentage which will make his road representation cost no more than at present, based upon the present sales, and still allow him to credit all orders to the salesmen; and under ordinary conditions the increase in business will make a favorable showing for both jobber and salesman. If he has to pay his salesmen greater salaries on this basis he will have the comforting knowledge that it is because the plan has resulted in a greater business.

### HIBBARD, SPENCER, BARTLETT & CO.

**I**T is always pleasant to note the recognition by old established houses of the value of the services rendered by young men who have been employed a sufficient length of time to enable their worth to be appreciated. A case of this kind has recently occurred in the corporation of Hibbard, Spencer, Bartlett & Co., Chicago. The directors of this company have for several years comprised William G. Hibbard, A. C. Bartlett, Charles H. Conover, E. G. Clark, H. J. Sawe, J. J. Charles and A. M. Graves. The board has been enlarged by the addition of ten members, as follows: William G. Hibbard, Jr., F. C. Bartlett, Frank Hibbard, C. B. Whipple, F. L. Macomber, H. B. Lyford, F. H. Warren, Henry Beneke, H. W. Chester and P. Stewart. Those who have dealings with this house will recognize among the new members

of the board the names of young men who have for several years been in charge of important departments, and will undoubtedly be pleased to learn of their promotion to a share in the responsibilities of conducting the company's business.

## MINNESOTA RETAIL HARDWARE ASSOCIATION.

**F**OLLOWING is the substance of a circular which is now being sent to every Hardware merchant in Minnesota, with a view to securing the membership of those not already affiliated with the retail Hardware association. It will be observed that the strength of the National Association, as well as the State organization, is referred to:

**FOUR THOUSAND RETAIL HARDWARE DEALERS**  
Are now organized as the National Association, and the movement has just begun.

As usual, Minnesota leads the procession with 540 live members.

See what National Secretary Corey said on receiving Minnesota's dues:

"The dues and subscriptions for bulletin of Minnesota Association's 512 members have just been received. Here's hoping you may never grow less. This indeed sets a high standard for other associations, but no one is jealous. We are proud of your strength. You honor your magnificent State and glorify and encourage our whole affiliated family."

While our State association now numbers a majority of the reputable Hardware dealers of the State, there are many good men still outside the breastworks that we hope will give this subject this attention it deserves.

At the price, \$3 a year (and this includes "National" dues), every Hardwareman in the State should be a member.

There is a great moral force in numbers, and we want you on our side. Let us have your application to-day.

We have mutual insurance, too. With us, you get ample protection and a big piece of money back at the termination of your policy. Send in your name and let us mail you some insurance pointers.

M. S. MATHEWS, Secretary.

Boston Block, Minneapolis, Minn.

## REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses:**

FROM ANDERSON-WILCOX HARDWARE COMPANY, Sour Lake, Texas, who have filed an application for charter with a capital of \$10,000 paid in. The new concern will occupy their own building, now in course of construction, by July 1, and are especially desirous of receiving catalogues and quotations relative to fine tools, Hardware Specialties, Wooden Ware, House Furnishing Goods and Stoves and Tinware.

FROM WILLCOX HARDWARE COMPANY, Marion, S. C., who will be pleased to receive catalogues pertaining to Plumbers' Supplies and Materials.

FROM FRENCH & BROWNELL HARDWARE COMPANY, Attleboro, Mass., who started in business March 1, the firm comprising Arno E. French, Alonzo N. Brownell and James P. Smith. Mr. French, who was formerly with N. Perry & Co. for 13 years, will manage the business, which includes Hardware, sheet metal work, plumbing and gas fitting, &c.

FROM SCHEIDT & SCHMEHL, who have just embarked in business at Lake Odessa, Mich., handling General Hardware, Stoves, Glass, Paints and Oils, Varnishes, &c.

WILLIS H. BENNETT, manager of the Reading Hardware Company's Chicago branch, is now busily engaged in devising plans for popular amusement. He is chairman of the Committee of Arrangements for the picnic of the Chicago Retail Hardware Dealers' Association, which will take place on July 15. In such capable hands, with favorable weather, the picnic will be an assured success. The Hardware dealers are anticipating some novel features in the entertainment programme as the result of Mr. Bennett's labors.

## TRADE ITEMS.

C. E. PEABODY & Co., 155 Chambers street, New York, have recently been made the New York agents for the sale of White's Patent Perfection Mop Wringers, made by the White Mop Wringer Company, Jamaica, Vt., which are made in two sizes, No. 1 for hotels and No. 2 for family use. The Wringers are crated in fours of the large size and six in a crate of the smaller, or No. 2 style.

PROVISION has been made for sports of all kinds, such as shooting contests, running races, tugs of war, wheelbarrow runs, &c., at the annual picnic of the Chicago Retail Hardware Dealers' Association, which will be held at Northwestern Park on July 15. The following Executive Committee has been appointed: W. H. Bennett, chairman; Fred. Ruhling, secretary; J. L. Smith, treasurer; G. A. Englehardt, W. B. Costello, C. A. Dalstrom and Hans Fehr. Other committees have been appointed by Mr. Bennett as follows: Transportation Committee, J. L. Smith, chairman; G. R. Lott, W. J. Krueger, Fred. Kurtz, J. H. Bixler and Thos. O'Connor. Floor Committee, Tony Englehardt, chairman; O. Stebbins, H. J. Racey, Emil Sander, Otto Hagen, J. H. Powers, Ed. Owen. Games Committee, W. T. Gormley, chairman; P. H. Schuster, H. C. Peppler, G. Bartholdy, Ed. Repsold, Grant W. Porter and A. B. Bregenzer. Target Committee, G. A. Englehardt, chairman; C. A. Dalstrom, G. E. Gnadt, W. C. Kasten, A. L. Adam, C. H. Christensen, Martin Englehardt. Refreshments Committee, J. Butweiss, chairman; J. F. Borchardt, Levi Rosenberg, E. L. Sommers, F. H. Schanze, F. Hora and G. J. Pfeiler. Judges: H. H. Roberts, D. W. Simpson, Sidney Johnston, J. D. Warren and J. O. Becroft.

ON Tuesday, June 16, a number of Chicago Hardware dealers were entertained at Aurora, Ill., by W. D. Simpson of the Wilcox Mfg. Company. The dealers inspected the plant of the company and were the guests at dinner of the president. The visiting party comprised W. H. Bennett, J. L. Smith, Dennis McLaughlin, G. R. Lott, C. A. Dalstrom, W. B. Costello, Emil Sander and Chas. H. Menzel.

THE ACME BALL BEARING COMPANY, 95 William street, New York, a reorganization of the Acme Ball Bearing Caster Company, have taken over the plant, patents, good will, &c., of the latter, and are continuing the business. The new company are also manufacturing the Acme Ball Bearing Jacks.

THE copartnership existing under the name of Gibbs Mfg. Company, Canton, Ohio, since its organization in 1884, have lately been incorporated under the laws of Ohio as the Gibbs Mfg. Company. The members of the former concern are the incorporators and directors of the new corporation, so that there is no change in management, the officers being as follows: Lewis Gibbs, president; Elmer W. Gibbs, vice-president and superintendent; Alvin J. Gibbs, secretary and treasurer. In addition to notions for the dry goods and notion trade and Toys for the Toy trade, the company manufacture a line of Hardware Specialties, including a complete line of Lawn Rakes and Post Hole Diggers.

A. V. TAYLOR & Co., Cincinnati, Ohio, manufacturing enamellers, are prepared to sell their line of Letters and Figures on the following plan: The merchant takes orders and mails them to the company, inclosing shipping tags and labels which the merchant wants used on the packages. The manufacturers ship the goods direct from the factory to the customer; no marks of the manufacturer being used on the outside or inside of the package or on the goods. The point is made that the merchant carries no stock, is at no expense and very little trouble. The company furnish catalogues, and, if desired, will sell the merchant neat sample outfits for traveling men.

THE MARITIME EDGE TOOL COMPANY, St. Stephen, N. B., now occupy the factory which F. Broad & Sons used for so many years. They have installed a good deal of new and improved machinery, and with the best skilled workmen expect to increase the business formerly done in Axes, Adzes, Hatchets, Mattocks, Grub Hoes, &c.

**CONSOLIDATED HARDWARE MFG. COMPANY.**

**T**HE CONSOLIDATED HARDWARE MFG. COMPANY, Reading, Pa., have been organized with a capital stock of \$2,500,000, of which \$1,500,000 is in bonds and \$1,000,000 in stock. The company will be incorporated under the laws of New Jersey. The new company have been organized as a holding company to take over the Reading Hardware Company and the Keystone Hardware Company, both of Reading. The factories of the constituent companies will, however, continue to be operated independently of each other. New buildings will be constructed and equipped with modern machinery for the manufacture of Builders' Hardware, and it is the intention not only to increase the output but to extend the line of manufacture. One and one-half million dollars of 5 per cent. bonds was paid for the stock of the Reading Hardware Company, giving to each shareholder of the Reading Hardware Company \$2 in bonds for each \$1 in stock. The following will be the officers of the Consolidated Hardware Mfg. Company: A. A. Gery, president; John E. Harbster, vice-president; H. L. Boas, secretary and treasurer. Associated with them as directors will be the following: Richmond L. Jones, John G. Mohn, G. N. Jacobi, Isaac G. Trait and Garrett B. Stevens.

John E. Harbster, president of the Keystone Hardware Company and for some years general manager of the Reading Hardware Company, will be made president of the Reading Hardware Company, succeeding his father, Matthan Harbster. It is reported that other Hardware manufacturing plants may hereafter become constituent companies of the consolidated holding company. The prime movers in the new organization were A. A. Gery, John E. Harbster and Howard L. Boas. Mr. Gery is authority for the statement that all of the authorized stock and bonds have been taken and there is none for sale to the general public. The consolidation will not affect the present organization of the Reading Hardware Company, who will continue their present methods of doing business, the new organization being simply a holding company.

**PRICE-LISTS, CIRCULARS, &c.**

**THE SYRACUSE CHILLED PLOW COMPANY**, Syracuse, N. Y.: Catalogue No. 11, illustrating Wheelbarrows, Scrapers, Plows, Trucks and Carts. The company state that their Syracuse Wheel Scrapers are meeting with much favor from contractors who are familiar with their merits.

**THE ALEXANDRIA HALTER MFG. COMPANY**, Alexandria, Ohio: Illustrated descriptive catalogue of Five-Ring Leather Halters, Bridles, Rope and Web Halters, Cow Ties, &c. The company state that it is their aim to keep their standard of quality well to the front, as their experience has been that the better class of goods are more satisfactory to all concerned.

**THE COLUMBIAN ENAMELING & STAMPING COMPANY**, Terre Haute, Ind.: Revised price-list of kitchen comforts and household necessities in Enameled Steel Ware. The catalogue is illustrated in colors, showing lines of Amethyst, double coated, and Dresden, triple coated, Ware.

**THE APEX MFG. COMPANY**, Detroit, Mich.: Illustrated folder showing Toaster and Ovens for use with gas or gasoline stoves; also Gas Hot Plates and Stove Burners for natural and artificial gas.

**THE NATIONAL WIRE CORPORATION**, New Haven, Conn.: Condensed price-list of Wire and Wire Nails.

**W. H. ANDERSON & SONS**, Detroit, Mich.: Price-list of Tools used in laying artificial stone or cement walks, driveways, floors, &c. The company remark that this industry has made wonderful strides during the past few years and that their line of Tools for this work is complete.

**THE COLONIAL ELECTRIC COMPANY**, Ravenna, Ohio:

Catalogue illustrating Direct Current Desk, Ceiling and Bracket Fans. The Fans are guaranteed against defects, either mechanical or electrical.

**THE AMERICAN TUBE & STAMPING COMPANY**, Bridgeport, Conn.: Catalogue F of the Wilmot & Hobbs Mfg. Company, manufacturers of Hot Rolled, Annealed and Pickled, also Bright Cold Rolled Strip, Band and Sheet Swedoh, Bessemer and Open Hearth Steel, for pressed, stamped and drawn work. They also manufacture crucible Steel for cutlery work, springs, &c. The catalogue illustrates Oilers, Lamps and Oilier Sets, Steel Floor Tilting, Bicycle Tubing, Automobile Rims, Bells, &c.

**THE SIMMONS HARDWARE COMPANY**, St. Louis, Mo.: Catalogue No. 435, illustrating Baby Carriages, Refrigerators, Ice Cream Freezers, Baskets, Reed Furniture, Chairs, Iron Bedsteads, Mattresses, &c. Catalogue No. 438 is devoted to Reed Lawn Furniture, Fancy Armchairs and Rockers, Brass and Iron Beds, Coolers, Filters, Lawn Swings, Wrapping Paper, &c.

**MISCELLANEOUS NOTES.****Rust Remover.**

The G. W. Cole Company, 149 Broadway, New York, supplementing their large line of specialties for bicycles and motor vehicles, &c., including three-in-one oil, graphite lubricants and other accessories, are offering the R. R. (removes rust) preparation, which will remove rust from all metals, as well as polish brass, nickel and steel. It is guaranteed by the makers to contain no acid or emery, and is confidently recommended by them for use on cycles, motor vehicles, carriage and harness trimmings, golf clubs, yacht trimmings and tools, skates, metal signs and railings and any kind of kitchen utensils and household ornaments of the above metals. Surfaces so polished, it is stated, will not soon corrode, rust or tarnish. It is put up in collapsible tubes in small and large size to retail for 10 and 25 cents each, respectively.

**Circular, Rabbet, Tonguing and Grooving Planes.**

Among the planes added recently to their rapidly increasing line by the Union Mfg. Company, New Britain, Conn., and 103 Reade street, New York, and shown in their new illustrated catalogue of iron and wood planes is the Union improved circular plane, No. 311. It is referred to as easily and rapidly adjusted, and has a flexible steel face that can be quickly changed to either convex or concave form. Another is the Union Rabbet plane and fillester, No. 43, which has two seats for cutter. By inserting the cutter in the forward seat it can be used also as a bull nose rabbet plane. The arm is reversible, and can be used on right or left hand side of plane. It is packed complete with fence, arm and depth gauge. Still another is the Union tonguing and grooving plane in Nos. 41 and 42. This plane has two separate cutters for making a tongue. By releasing the pin at the front of the plane the fence may be swung on a central pivot and reversed, thus covering one cutter. The plane may then be used to form a groove to match the tongue. The Union adjustable veneer scraper, No. 60, likewise new for them, is used for veneer and cabinet work, and because of its peculiar form is adapted for other classes of work. It can also be used as a tooth plane, and when wanted, toothing cutters can be furnished by the company.

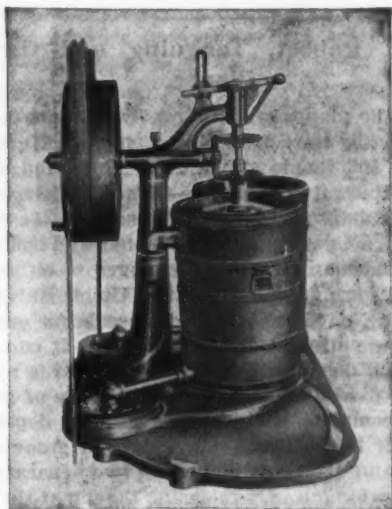
**The Delphos Can.**

The Delphos Can Company, Delphos, Ohio, are manufacturing the Delphos can, the essential feature of which is that it will not overfill a receptacle, thus doing away with uncleanness and at the same time saving oil. One of the prominent features of the can is the construction of the pump, which fits in a socket on the bottom of the can and is firm and solid. It is a force pump and siphon combined, thus making it possible to

either fill or empty the receptacle with the pump. Another feature is the spout, which is made of two tubes; the first through which the oil is pumped into the receptacle; the second, through which the surplus oil returns to the can when receptacle is nearly full. The can has a hinged cover which conceals the pump, keeps out dirt and during the winter keeps the pump free from snow and ice. A small bracket back of the hinge keeps the cover from breaking off and holds it in nearly a perpendicular position. The cans are made in 3 and 5 gallon sizes, and are referred to as made of the best material and by skilled workmen.

#### Walker's Improved Double Ice Cream Freezer.

In the accompanying cut is shown an improved double ice cream freezer, put on the market by the I. X. L. Ice Cream Company, Warren, Pa. The freezer is used in connection with the brine system, the brine being taken from a general supply main in which the brine pressure is from 15 to 20 pounds at the brine pump. There is a connection of  $\frac{3}{4}$ -inch pipe from the brine main to a three-way cock, which is connected at the opposite side with  $1\frac{1}{4}$ -inch pipe and from there up through the floor to the under side of the freezer, to a short nipple and a brass swinging joint, and thence by means of  $1\frac{1}{4}$ -inch pipe by a union to a point near the bottom of the freezer tub. At the side of the three-way cock a third connection is made with  $1\frac{1}{4}$ -inch pipe to a  $2\frac{1}{2}$ -inch tee, which is also connected at the bottom of the hollow standard of the freezer, thence leading to brine storage tank. The flow of brine is controlled by the three-way cock. By a quarter turn the brine flows through the cock, up through the swinging joint, and enters the tub near the bottom. When the freezer tub is filled with brine the can containing the prepared cream and dasher are set in place in the tub in the usual way. At a point within about 2 inches of the top of the can a spout is attached to the freezer tub, whereby the overflowing brine is conveyed into the hollow standard. About 14 gallons of brine pass



Walker's Improved Double Ice Cream Freezer.

through the tub each minute, and are conducted through the hollow standard by a  $2\frac{1}{2}$ -inch pipe back to the receiving tank. The cream is revolved by means of power. When the cream is sufficiently frozen, which, it is explained, is accomplished with the brine at zero or 4 degrees below, in from 6 to 8 minutes, the belt is shifted to a loose pulley, the brine is shut off and by a quarter turn of a small wheel the dasher and can are disconnected in an instant. The freezer, with the swing pipe connection which supplies brine to the tub, is shoved to the outside of the bed plate which supports the tub carrier. The operator then swings the opposite tub in the place where the first tub was, turns the brine into the tub, the dasher and can connections are made, and the freezing operation goes on in the second tub. The can and dasher are removed from the first tub, the cream transferred in the usual way into the shipping cans and

placed in storage tanks. By this method, it is pointed out, one man can freeze 60 gallons of cream per hour, there are no wet floors and there is practically no waste of brine, as it can be used over and over again. The company also manufacture storage tanks, in which the shipping cans are placed. The brine is circulated about the cans in much the same manner as in the freezers. The company state that they once kept a freezer of cream in a storage tank, in the foregoing manner, for three months, and found the cream good and sweet when taken out of the brine.

#### Humphryes' Compressed Air Spray Pump and Coating Machine.

The Humphryes Mfg. Company, Mansfield, Ohio, are offering a compressed air pump for painting and whitewashing, also for spraying, as shown herewith. The ma-



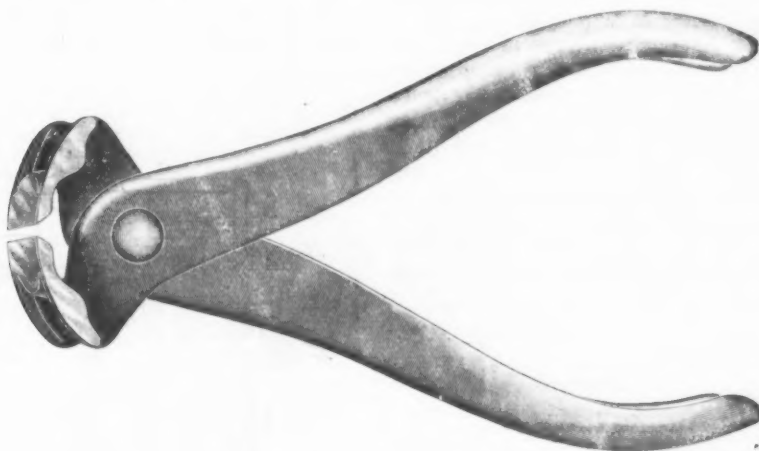
Humphryes' Compressed Air Spray Pump and Coating Machine.

chine is made in one size only, having a 3-inch pump, an 8 x 30 inch galvanized iron tank for storing air and a 12 x 30 inch galvanized iron tank for liquid. When desired the machine can be mounted on a platform with wheels so that it can be readily moved from place to place. Attention is directed to the fact that the machine has separate tanks for air and liquid, so that the fluid or mixture does not pass through the pump, but is forced from the large tank direct to the discharge hose or pipe. In operation the small tank is filled with air from the pump, and after the large tank is filled with liquid and the valve closed between the funnel and the tank, the valve connecting the tank is opened, allowing the air to pass into the large tank through a pipe extending to the bottom of the tank, which acts as an agitator and thoroughly mixes the fluid. One man can operate the machine, and when the gauge on the air tank registers 40 pounds pressure, all the liquid, it is explained, can be exhausted in the tank without the further use of the pump. It is pointed out that it requires but five minutes' pumping to furnish sufficient air pressure to spray automatically from 25 to 30 minutes. The manufacturers state that if used for whitewashing or painting the machine will pay for itself in a short time, as the expense is about 1 cent per 100 square feet, compared with 15 cents per 100 square feet by brush; also that brush work requires more paint and will not cover as well as the machine.

**End Cutting Nipper No. 132.**

The end cutting nipper herewith shown is forged from solid steel and tempered. The separate jaws and han-

covered and sealed their use is claimed to avoid the birth of disease breeding elements, common to open buckets. The construction of the pail is such as to add



*End Cutting Nipper No. 132.*

dles are all in one piece. The nippers are made in 5-inch size and are designed for soft wire only. These goods are put on the market by the Bridgeport Hardware Mfg. Company, Bridgeport, Conn.

force to the stream of water when applied against flames and to contribute greater throwing power.

**The Acme Sanatory Chemical Fire Pail.**

The fire pail illustrated herewith is manufactured by the Waggoner Watchman Clock Company of Grand Rap-

**The Samson Hose Mender.**

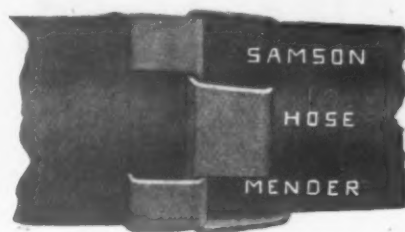
The accompanying illustrations show the Samson hose mender in use, one end being joined in Fig. 1, and Fig. 2 showing the completed joint. The mender is manufactured by the Grand Rapids Hose Coupler Company,



*The Acme Sanatory Chemical Fire Pail.*

ids, Mich. The pails are made of galvanized iron and are japanned red on the outside. A chemical solution is provided, which, it is claimed, increases 100 per cent.

Grand Rapids, Mich., who claim for it a number of points of superiority, among them being the quickness with which broken or leaky hose can be repaired, sim-



*Fig. 1.—The Samson Hose Mender.*

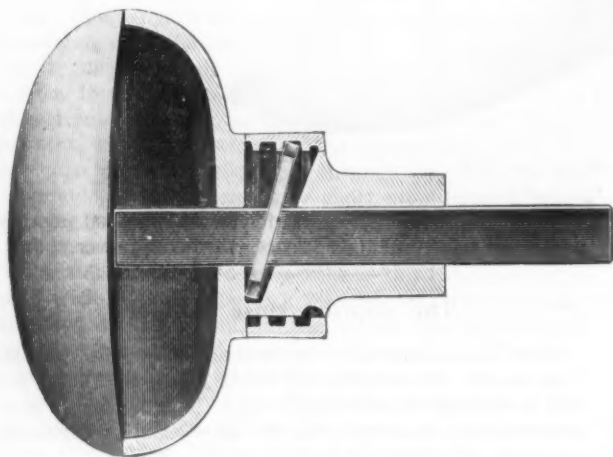
*Fig. 2.—The Completed Joint.*

the effectiveness of the water against fire. The pails are made to hold 14 quarts, and are said to be nonfreezing, nonevaporating and noncorrosive. Because they are

plicity of the operation, effectiveness against leakage and durability of the mended part against strains or rough usage of any kind.

### Noack's Screwless Spindle Knob.

New York Lock Company, Branford, Conn., represented at 117 Chambers street, New York, by J. N. Limeburner, have put on the market Noack's patent screwless spindle knob, a sectional view of which, actual size, is here shown. The chief points of interest to the trade mentioned by the manufacturers are the simple, effective character of the mechanism, the moderate price at which the knobs can be marketed and the rapidity with which they can be fitted, an important labor item, especially in large contract jobs. The outer knob and spindle are riveted as is customary. The movable or inside knob has a screw collar which operates a square wrought iron rocking washer, a half turn of the collar on the final turn locking or releasing the spindle, accord-



Noack's Screwless Spindle Knob.

ing to the way it is turned, the collar being operated by a small spanner in connection with a shallow hole in the collar. The arrangement of the collar on the knob shank is such that the collar can be revolved a few turns but not removed. This system dispenses with screw holes in the spindle which weaken it, especially in brass spindles for ship work, or the use of washers to obtain a fit. It is the intention to put these knobs on the market in competition with screw knobs of all kinds, including the cheaper ones.

### The New Turner Carburetor.

The carburetor, manufactured by the Turner Brass Works, Chicago, Ill., shown in the accompanying illus-

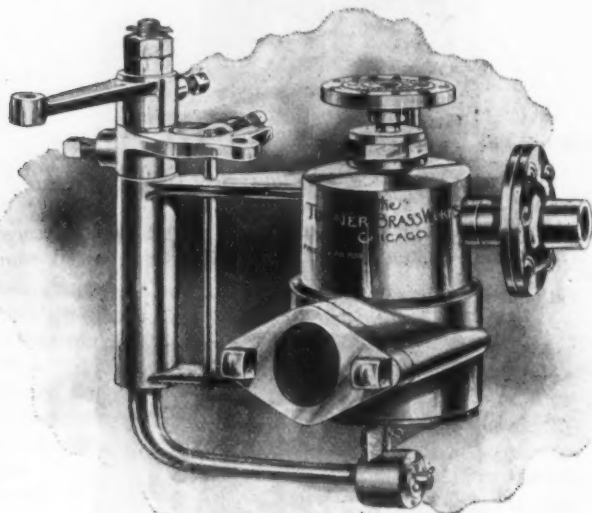


Fig. 1.—The New Turner Carburetor.

trations, is designed for installation on hydrocarbon automobiles, stationary and marine motors. The manufacturers claim that the carburetor is a positive fuel feeder;

that it assures perfect control over the speed and power of the machine; that its use contributes to greater speed and power of the machine; that it is not affected by jars, change in the weather, or grade of gasoline used, and that it will not flood the motor with gasoline or produce a cloud of smoke. The interior construction shown in Fig. 2, consists of a large bowl, having air and mixing

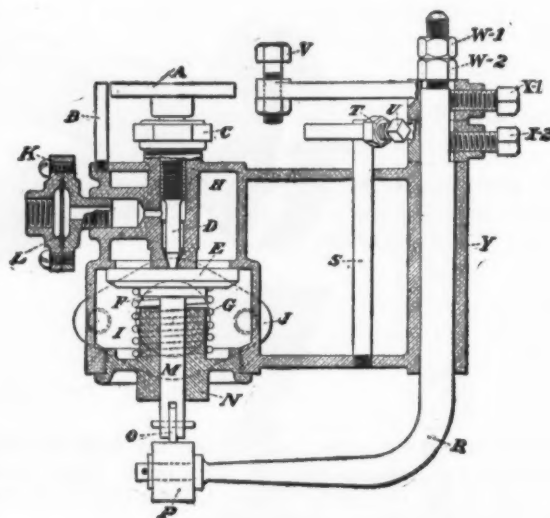
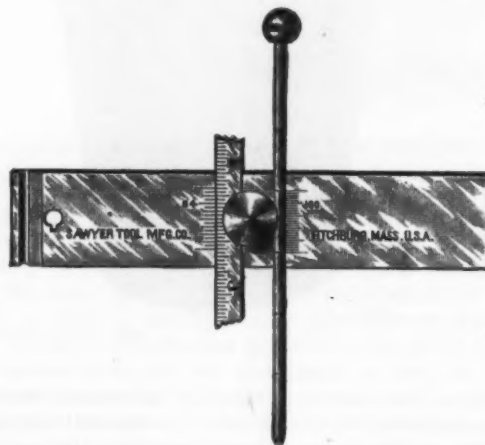


Fig. 2.—Sectional View of Carburetor.

chambers, separated by a large leather faced feeder, which is held to its seat by a spring. The throttle consists of a simple piece of spring steel, an operating lever and a flat steel bar.

### Improved Depth Gauge No. 57.

The Sawyer Tool Mfg. Company, Fitchburg, Mass., are putting on the market the improved depth gauge shown herewith. It is referred to as combining in one



Improved Depth Gauge No. 57.

tool the advantages of the rule and the round rod, and as intended to meet the most exacting requirements. The stock is graduated in 64ths and 100ths inch and measurements may be read at a glance by comparing the 1/2-inch divisions on the rod with the graduations on the stock. The rod is held against either graduation by the beveled head of the bolt, a slight turn of the nut being sufficient to clamp the rod in place. The same bolt holds the rule. By transferring the bolt to the hole near the end of the stock the gauge may be used in many places where otherwise its use would be impossible. The tool is made in two sizes of stock, 4 and 6 inch, and in two sizes of rod and rule, 4 and 6 inch.

# Current Hardware Prices.

REVISED JUNE 16, 1903.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33 1/3 @ 33 1/3 & 10% signifies that the

price of the goods in question ranges from 33 1/3 per cent. discount to 33 1/3 and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued April, 1902, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Abrasives—

damite in Carloads: ... 1 ton \$90@100  
Crystal..... 1 ton \$120@130  
Grain..... 1 ton \$120@130  
See also Emery.

## Adjusters, Blind—

Domestic, per doz. \$3.00..... 33 1/3  
North's..... 10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent..... 25&25  
Taplin's Perfection..... 25&25

**Ammunition**—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Armand Hammer, Wrought \$18.50@24.00  
Buel Patent Trenton..... 10%  
Eagle Anvils..... 10%  
Hay-Ludden, Wrought..... 10%  
Horseshoe brand, Wrought..... 10%  
Imported—

Peter Wright & Sons..... 10%  
Anvil, Vise and Drill—

Millers Falls Co., \$18.00..... 50&10%

**Apple Parers**—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Hull Bros. Co.:  
Lots of 1 doz..... 25%  
Smaller Lots..... 30%  
Lots of 3 doz..... 30%

## Augers and Bits—

Com. Double Spur..... 70&10@75%  
Boring Machine Augers..... 70&10@75%  
Car Bits, 12-in. twist..... 60@60&10%  
Jennings' Pattern  
Auger Bits..... 50&10@50%  
Ford's Auger and Car Bits..... 40%  
Forester Pat. Auger Bits..... 25%  
C. E. Jennings & Co.:  
No. 10 ext. lip, R. Jennings' list 25&10%  
No. 30, R. Jennings' list..... 40%  
Russell Jennings..... 25&10@25%  
L'Honniedieu Car Bits..... 15&10%  
Mayhew's Countersink Bits..... 45%  
Miller's Falls..... 50&10@50%  
Pugh's Black..... 30%  
Pugh's Jennings' Pattern..... 25%  
Snell's Auger Bits..... 60%  
Snell's Bell Hangers' Bits..... 50&10%  
Snell's Car Bits, 12-in. twist..... 60%  
Wright's Jennings Bits (R. Jennings' list)..... 50%  
See Drills, Twist.

## Bit Stock Drills—

See Drills, Twist.

## Expansive Bits—

Clark's small, 1 1/2; large, 3/4..... 50&10%  
Lavigne's Clark's Pattern, No. 1, 1/2 doz., \$28, No. 2, \$18..... 50&10%  
C. E. Jennings & Co., Steer's Pat. 25&10%  
Swan's..... 60%

## Gimlet Bits—

Common Double Cut, gro. \$2.50@3.00  
German Pattern..... gro. \$5.00@5.50

## Hollow Augers—

Bonney Pattern, per doz. \$11.00@11.50  
Ames..... 35&10%  
New Patent..... 35&10%  
Universal..... 20%  
Wood's Universal..... 25%

## Ship Augers and Bits—

Ford's..... 40%  
Snell's..... 40%  
C. E. Jennings & Co.:  
L'Honniedieu's..... 15&10%  
Watrous..... 33 1/3&10%  
Awl Hafts, See Hafts, Awl.

## Awls—

Brad Awls:  
Handled..... gro. \$2.75@3.00  
Unhandled, Shouldered, gro. \$3.00@3.50  
Unhandled, Patent..... gro. 60@70%  
Peg Awls:  
Unhandled, Patent..... gro. 31@35c  
Unhandled, Shouldered, gro. 65@70c  
Scratch Awls:  
Handled, Common, gro. \$3.50@4.00  
Handled, Socket, gro. \$1.50@1.50  
Hurwood..... 40%

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

First Quality, factory brands..... \$5.50  
First Quality, jobbers' brands..... \$5.00@5.25  
Second Quality..... \$4.50@4.75  
Axle Grease—See Grease, Axle.

## Axles—

Concord, Loose Collar..... 4 1/2@5c  
Concord, Solid Collar..... 4 1/2@5c  
No. 1 Common..... 3 1/2@4c  
No. 1 & 2, Com. New Style..... 3 1/2@4c  
No. 2, Solid Collar..... 4 1/2@5c  
Nos. 11 to 15..... 60&10@70%  
Nos. 15 to 18..... 60&10@70%  
Nos. 19 to 22..... 70&10@85%  
\$2 cash 10 days.

## Boxes, Axle—

Common and Concord, not turned..... 1b. 4 1/2@5 1/2c  
Common and Concord, turned..... 1b. 5@5 1/2c  
Half Patent..... 1b. 9@9 1/2c

## Balances—

Caldwell new list..... 50%  
Poulman's..... 60%

## Spring—

Spring Balances..... 60@60&5%  
Chatillon's:  
Light Spg. Balances..... 40&10%  
Straight Balances..... 40%  
Circular Balances..... 50%  
Large Dial..... 30%  
Pelouze..... 50%

## Barb Wire—See Wire, Barb.

## Bars—

Steel Cranebars, 10 to 40 lb., per lb. 3@3 1/2c

## Towel—

No. 10 Ideal, Nickel Plated..... 1/2 gro. 88.50  
No. 20 Ideal, Brass Finish..... 1/2 gro. 85.50

## Baskets—

Hoffman's Brick Baskets..... each \$3.25

## Beams, Scale—

Scale Beams, List Jan. 12, '92, 40&10%  
Chatillon's No. 1..... 30%  
Chatillon's No. 2..... 40%

## Beaters—

Lightning Chain, per doz. \$1.15; per gro. \$12.00

## National Mfg. Co.:—

No. 1 Dover, Family size..... \$7.00  
No. 2 Dover, Hotel size..... 11.00

## Taplin Mfg. Co.:—

No. 69 Improved Dover..... \$6.50  
No. 75 Improved Dover..... \$7.50  
No. 75-2 Imp'd Dover, Tin'd..... \$9.00  
No. 100 Improved Dover..... \$8.00  
No. 100 Improved Dover, Tin'd..... \$9.50  
No. 150 Improved Dover, Hotel..... \$15.00  
No. 152 Imp'd Dover, Hotel, T'd..... \$17.00  
No. 200 Imp'd Dover Tumbler..... \$9.00  
No. 300 Imp'd Dover Tumbler, Tin'd..... \$10.00  
No. 300, Imp'd Dover Mammoth, 1/2 doz..... \$27.00  
Wonder (S. S. & Co.)..... per gro. \$6.00

## Bellows—

Blacksmith, Standard List, 70@70&10%

## Blacksmiths'—

Inch..... 30 32 34 36 38 40  
Eac. v. \$3.50 3.75 4.25 4.80 5.35 6.15

## Extra Length:—

Each \$4.00 4.55 5.10 5.60 6.40 7.50

## Molders—

Inch..... 9 10 11 12 13  
Doz..... \$3.00 9.50 10.90 12.80 14.25

## Hand—

Inch..... 6 7 8 9 10  
Doz..... \$4.75 5.70 6.60 7.60 8.50

## Bells—

Ordinary goods..... 75&5@75&10%  
High grade..... 70@70&10%  
Jersey..... 75&10%  
Texas Star..... 50%

## Door—

Abbe's Gong..... 45%  
Barton Gong..... 55%  
Home, R. & E. Mfg. Co.'s..... 55&10%  
Lever and Pull, Sargent's..... 60&10&10%  
Yankee Gong..... 35%

## Hand—

Hand Bells, Polished..... 60&5@60&10%  
White Metal..... 55@55&10%  
Nickel Plated..... 50@50&5%  
Swiss..... 60@60&10%  
Cone's Globe Hand Bells..... 35@35&10%  
Silver Chime..... 35@35&10%

## Miscellaneous—

Farm Bells..... 1b. \$2@3 1/2c  
Steel Alloy Church and School..... 70%  
American Tube & Stamp'g Co. Gong..... 70%  
Trip Gong Bells..... 55&10@60%

## Belting— Rubber—

Agricultural (Low Grade)..... 75&10@80%  
Common Standard..... 75&10@80%  
Standard..... 70@70&10%  
Extra..... 60&10@60&10%  
High Grade..... 50&10@50&10&5%  
Boston Belting Co.:  
Seamless Stitched Imperial..... 45&5%  
Boston..... 50&5%  
Niagara..... 60&5%

## Leather—

Extra Heavy, Short Lap..... 60@60&5%  
Regular Short Lap 60&10@60&10&10%  
Standard..... 70@70&5%  
Light Standard..... 70&10%  
Cut Leather Lacing..... 60&10%  
Leather Lacing Sides, per sq. ft. 18c

## Bench Stops—See Stops, Bench

## Benders and Upsetters, Tire—

Detroit Perfected Tire Bender..... 40%  
Green River Tire Benders and Upsetters..... 20%  
Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25; No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50.

## Bicycle Goods—

John S. Leng's Son's 1902 list:  
Chain..... 50%  
Forks..... 50%  
Spokes..... 50%  
Tubes..... 60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—  
See Augers and Bits.

## Blocks—

Common Wooden..... 70&10@75%  
Hollow Steel Blocks, with Ford's Patent Sheaves..... 50&10%  
Lane's Patent Automatic Look and Junior..... 30%  
Stowell's Novelty, Mal. Iron..... 50&10%  
See also Machines, Hoisting.

## Boards Stove—

Zinc, Crystal, &c..... 50&10@40%

## Boils—

Carriage, Machine &c.—  
Common, list Feb. 1, '02..... 60&10@60&10&10%  
Norway Iron, \$3.00, list Jan. 1, '93..... 80@50&5%  
Phila., Eagle, \$3.00 list May 25, '99..... 80@50&5%

Bolt Ends, list Feb. 14, '95..... 65&5@.....  
Machine, list Oct. 1, '99..... 65@.....  
Machine with C & T. Nuts..... 60&2 1/2@.....  
NOTE.—Jobbers are in many cases underselling the manufacturers.

## Door and Shutter—

Cast Iron Barrel, Round Brass Knob:  
Inch..... 3 4 5 6 8  
Per doz..... \$0.25 .30 .39 .47 .65  
Cast Iron Spring Foot:  
Inch..... 6 8 10  
Per doz..... \$1.00 1.25 1.75  
Cast Iron Chain, Flat, Japaned:  
Inch..... 6 8 10  
Per doz..... \$0.75 1.05 1.30  
Cast Iron Shutter, Brass Knobs:  
Inch..... 6 8 10  
Per doz..... \$0.87 .80 1.00  
Wrt Barrel, Jap'd, 75&10@75&10&10%  
Wrought..... Bronzed, 40&5@50&10%  
Wrought Flush, B. K., 50&10@60&10%  
Wrought Shutter..... 40&10@40&10%  
Wrought Square Neck..... 50&10@50&10%  
Wrought Sunk, Flush..... 50&10@50&10%  
Ives' Patent Door..... 60%

## Stove and Plow—

Plow..... 60@.....  
Stove..... 30@30&10%

## Tire—

Common..... 72 1/2@72 1/2&10%  
Norway Iron..... 80@80&5%  
American Screw Company..... 80%  
Norway Phila., list Oct. 16, '94..... 80%  
Eagle Phila., list Oct. 16, '94..... 80%  
Bay State, list Dec. 28, '99..... 72 1/2%

## Franklin Moore Co.:—

Norway Phila., list Oct. 16, '94..... 80%  
Eagle Phila., list Oct. 16, '94..... 80%  
Eellpa, list Dec. 28, '99..... 72 1/2%  
Russell, Burdall & Ward Bolt & Nut Co.  
Empire, list Dec. 28, '99..... 72 1/2%  
Norway Phila., list Oct. '94..... 80%  
Upon Nut Co.:  
Tire Bolts..... 72 1/2%

## Borers, Tap—

Borers Tap, Ring, with Handle:  
Inch..... 1 1/4 1 3/4 1 1/2 2  
Per doz..... \$4.50 5.00 5.75 7.25  
Inch..... 2 1/4 2 1/2 2 3/4 3  
Per Doz..... \$8.65 11.50 14.50 17.50  
Enterprise Wtg. Co., No. 1, \$1.35; No. 2, \$1.65; No. 3, \$2.50 each..... 35%  
C. E. Jennings & Co..... 25&10%  
Langdon..... 15&10%  
Schatz..... 40%

## Boxes, Mitre—

C. E. Jennings & Co..... 25&10%  
Langdon..... 15&10%  
Schatz..... 40%

## Braces—

NOTE.—Most Braces are sold at net prices.  
Common Ball, American..... \$1.15@1.25  
Barber's..... 50&10@60&10%  
Fray's Genuine Spofford's..... 40%  
Fray's No. 70 to 120, \$1 to 123, 207 to 414..... 60%  
C. E. Jennings & Co..... 50&5&10%  
Mayhew's Ratchet..... 60%  
Mayhew's Quick Action Hay Patent..... 50%  
Millers Falls Drill Braces..... 25&10%  
P. S. & W. Co. Peck's Patent 60&10@65%

## Brackets—

Wrought Steel..... 75&10@80%  
Bradley's Wire Shelf:  
Full cases..... 80&10&10%  
Broken cases..... 80&10%  
Griffin's Press..... 30%  
Griffin's Folding Brackets..... 70&10%

## Bright Wire Goods—See Wire and Wire Goods.

## Broilers—

Wire Goods Co..... 75@75&10%

## Buckets, Well and Fire—

## See Pails

## Bucks Saw—

Hoosier..... per gro. \$36.00

## Bull Rings—See Rings, Bull.

## Butts—

Wrought list Sept., '96..... 30@30&5%  
Cast Brass, Tiebout's..... 30%

## Cast Iron—

Fast Joint, Broad..... 50@50&10%  
Fast Joint, Narrow..... 50@50&10%  
Loose Joint..... 70&5@70&10%  
Loose Pin..... 70&5@70&10%  
Mayer's Hinges..... 70&5@70&10%  
Parliament Butts..... 70&5@70&10%

## Wrought Steel—

Table and Back Flaps..... 75%  
Narrow and Broad..... 75%  
Inside Blind..... 75&10%  
Loose Pin..... 75&10%  
Loose Pin, Ball and Steeple Tip..... 60%  
Japanese, Ball Tip Butts, 70&10%  
Bronzed Wrt. Nar. and Inside Blind Butts..... 55&10%  
Extra 100@100&10%

## Cages, Bird—

Hendryx, Brass:  
3000, 5000, 1100 series..... 5%  
1200 series..... 33 1/3%  
200, 300, 500 and 900 series..... 40&10%  
Hendryx Bronze:  
700, 800 series..... 40&10%  
Hendryx Enameled..... 40&10%

## Calipers—See Compasses.

## Calks, Toe and Heel—

Blunt, 1 prong..... per lb. 4@4 1/2c  
Sharp, 1 prong..... per lb. 4 1/2@4 1/2c  
Perkins' Blunt Toe..... 35%  
Perkins' Sharp Toe..... 35%

## Cannons—

Breech Loading, 32 cal. Cartridge, Toy Cannons..... per doz \$2.00

**Can Openers—See Openers, Can Cans, Milk—**

|                    |        |      |       |       |
|--------------------|--------|------|-------|-------|
| Illinois Pattern.  | \$1.50 | 2.00 | 2.25  | each. |
| Iowa Pattern.      | 2.35   | 2.50 | each. |       |
| New York Pattern.  | 1.65   | 2.40 | 2.75  | each. |
| Baltimore Pattern. | 1.80   | 2.00 | each. |       |

**Cans, Oil—**

|                          |         |         |        |     |
|--------------------------|---------|---------|--------|-----|
| Buffalo Family Oil Cans: |         |         |        |     |
| 3 gal.                   | 5       | 10 gal. |        |     |
|                          | \$48.00 | 60.00   | 120.00 | gro |

**Caps—Percussion—**

|              |              |  |  |  |
|--------------|--------------|--|--|--|
| Eley's E. B. | 60c          |  |  |  |
| G. D.        | per M 32@34c |  |  |  |
| F. L.        | per M 42@50c |  |  |  |
| G. E.        | per M 42@50c |  |  |  |
| Musket.      | per M 62@64c |  |  |  |

**Primers—**

|                                |               |    |  |  |
|--------------------------------|---------------|----|--|--|
| Berdan Primers, \$1.00 per M.  | 58            |    |  |  |
| B. L. Caps (Sturtevant Shells) | \$1.00 per M. | 58 |  |  |
| All other primers per M.       | \$1.22@1.27   |    |  |  |

**Cartridges—**

|                             |        |  |  |  |
|-----------------------------|--------|--|--|--|
| Blank Cartridges:           |        |  |  |  |
| 22 C. F.                    | 10c55  |  |  |  |
| 22 C. F., \$7.00.           | 10c55  |  |  |  |
| 22 cal. Rim.                | 10c55  |  |  |  |
| 22 cal. Rim, \$2.75.        | 10c55  |  |  |  |
| B. B. Caps, Con. Ball Sngl. | \$1.90 |  |  |  |
| B. B. Caps, Round Ball.     | \$1.49 |  |  |  |
| Central Fire.               | 25c    |  |  |  |
| Target and Sporting Rifle.  | 15c55  |  |  |  |
| Primer Shells and Bullets.  | 15c55  |  |  |  |
| Rim Fire Sporting.          | 60c    |  |  |  |
| Rim Fire Military.          | 15c55  |  |  |  |

**Cases, Show—**

|                                      |         |  |  |  |
|--------------------------------------|---------|--|--|--|
| Sun, No. 102, Silent Salesman, 6 ft. | \$25.00 |  |  |  |
|--------------------------------------|---------|--|--|--|

**Casters—**

|                            |            |  |  |  |
|----------------------------|------------|--|--|--|
| Bed.                       | 70c@70c10c |  |  |  |
| Plate.                     | 60c@60c55c |  |  |  |
| Philadelphia.              | 75c@75c10c |  |  |  |
| Boss.                      | 70c10c     |  |  |  |
| Boss Anti-Friction.        | 70c10c     |  |  |  |
| Martin's Patent (Phoenix). | 45c        |  |  |  |
| Standard Ball Bearing.     | 45c        |  |  |  |
| Tucker's Patent low list.  | 30c        |  |  |  |

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Coll—**

|                                    |      |       |      |                  |      |      |      |
|------------------------------------|------|-------|------|------------------|------|------|------|
| American Coll. Jobbers' Shipments. |      |       |      |                  |      |      |      |
| 5-16                               | 1/4  | 6-16  | 3/4  | 7-16             | 1/2  | 8-16 | 1/2  |
| 8.50                               | 6.00 | 4.90  | 4.00 | 3.80             | 3.70 | 3.65 | 3.65 |
| 9-16                               | 3/4  | 10-16 | 1/2  | 1 to 1 1/4 inch. |      |      |      |
| 3.60                               | 3.55 | 3.50  | 3.40 | per 100 lb.      |      |      |      |
| German Coll.....                   |      |       |      | 60¢ to 10¢ 100   |      |      |      |

**Forks—Aug. 1, 1899, list.**

|                              |     |
|------------------------------|-----|
| Hay, 2 tine.....             | 60¢ |
| Hay, 3 tine.....             | 60¢ |
| Hay, 4 tine.....             | 60¢ |
| Hay, Header and Baler 3 tine | 60¢ |
| Hay, Header and Baler 4 tine | 60¢ |
| Grain or Barley.....         | 70¢ |
| Manure, 4 tine.....          | 60¢ |
| Manure, 5 and 6 tine.....    | 60¢ |
| Spading.....                 | 70¢ |

Extra 5%

|                                    |             |
|------------------------------------|-------------|
| Iowa Dig-Easy Potato.....          | 65¢         |
| Victor, Hay.....                   | 60¢         |
| Victor, Manure.....                | 60¢         |
| Victor, Header.....                | 60¢         |
| Champion, Hay.....                 | 60¢         |
| Champion, Manure.....              | 60¢         |
| Columbia, Hay.....                 | 60¢         |
| Columbia, Manure.....              | 60¢         |
| Columbia, Spading.....             | 70¢         |
| Hawkeye Wood Barley 4 tine 9 doz.  | \$5.00      |
| W. & C. Potato Digger.....         | 60¢         |
| Acme Hay.....                      | 60¢         |
| Acme Manure, 4 tine.....           | 60¢         |
| Acme Manure, 5 tine.....           | 60¢         |
| Dakota Header.....                 | 60¢         |
| Jackson Steel Barley.....          | 60¢         |
| Kansas Header.....                 | 60¢         |
| W. & C. Favorit Wood Barley 4 tine | \$5.00      |
| Plated.....                        | See Spoons. |

**Fountains, Stock—**

|                   |                  |
|-------------------|------------------|
| Double Dewey..... | per doz. \$36.00 |
|-------------------|------------------|

**Frames—Saw**

|                                  |                 |
|----------------------------------|-----------------|
| Red, Polished and Varnished..... | per doz. \$1.34 |
|----------------------------------|-----------------|

**Freezers, Ice Cream—**

|                         |                               |
|-------------------------|-------------------------------|
| Qts. 2 3 4 5 6 7 8 9 10 | 1.15 1.65 1.95 2.40 3.30 4.30 |
|-------------------------|-------------------------------|

|                                      |  |
|--------------------------------------|--|
| Good \$1.25 1.40 1.70 2.15 2.75 3.75 |  |
|--------------------------------------|--|

|                                      |  |
|--------------------------------------|--|
| Fair \$1.00 1.10 1.30 1.75 2.30 2.99 |  |
|--------------------------------------|--|

**Fruit and Jelly Presses—**

See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.****Fuse—**

|                |                |
|----------------|----------------|
| Hemp Fuse..... | Per 1000 Feet. |
|----------------|----------------|

|                  |      |
|------------------|------|
| Cotton Fuse..... | 3.90 |
|------------------|------|

|                        |      |
|------------------------|------|
| Single Taped Fuse..... | 3.25 |
|------------------------|------|

|                        |      |
|------------------------|------|
| Double Taped Fuse..... | 4.20 |
|------------------------|------|

|                        |      |
|------------------------|------|
| Triple Taped Fuse..... | 5.00 |
|------------------------|------|

**Gates, Molasses and Oil—**

|                        |                |
|------------------------|----------------|
| Stebbins' Pattern..... | 80¢ to 80¢ 1/2 |
|------------------------|----------------|

**Gauges—**

|                            |                        |
|----------------------------|------------------------|
| Marking, Mortise, etc..... | 50¢ to 100¢ 10¢ to 10¢ |
|----------------------------|------------------------|

|                         |                        |
|-------------------------|------------------------|
| Chapin-Stephens Co..... | 50¢ to 100¢ 10¢ to 10¢ |
|-------------------------|------------------------|

|                            |                        |
|----------------------------|------------------------|
| Marking, Mortise, etc..... | 50¢ to 100¢ 10¢ to 10¢ |
|----------------------------|------------------------|

|                      |                        |
|----------------------|------------------------|
| Scholl's Patent..... | 50¢ to 100¢ 10¢ to 10¢ |
|----------------------|------------------------|

|                   |                        |
|-------------------|------------------------|
| Door Hangers..... | 50¢ to 100¢ 10¢ to 10¢ |
|-------------------|------------------------|

|                          |                        |
|--------------------------|------------------------|
| Fulton's Butt Gauge..... | 50¢ to 100¢ 10¢ to 10¢ |
|--------------------------|------------------------|

|                            |                        |
|----------------------------|------------------------|
| Stanley B. & L. Co.'s..... | 50¢ to 100¢ 10¢ to 10¢ |
|----------------------------|------------------------|

|            |                        |
|------------|------------------------|
| Gauge..... | 50¢ to 100¢ 10¢ to 10¢ |
|------------|------------------------|

|                             |     |
|-----------------------------|-----|
| Wire, Brown & Sharpe's..... | 25¢ |
|-----------------------------|-----|

|                    |     |
|--------------------|-----|
| Wire, Morse's..... | 25¢ |
|--------------------|-----|

|                         |             |
|-------------------------|-------------|
| Wire P. S. & W. Co..... | 30¢ to 100¢ |
|-------------------------|-------------|

**Climets—Single Cut—**

|                                 |                  |
|---------------------------------|------------------|
| Nail, Metal, Assorted, gro..... | \$1.50 to \$1.80 |
|---------------------------------|------------------|

|                                  |                  |
|----------------------------------|------------------|
| Spike, Metal, Assorted, gro..... | \$2.80 to \$3.25 |
|----------------------------------|------------------|

|  |                  |
|--|------------------|
| Nail, Wood Handled, Assorted, gro..... | \$1.75 to \$2.00 |
|--|------------------|

|   |                  |
|---|------------------|
| Spike, Wood Handled, Assorted, gro..... | \$3.25 to \$3.50 |
|---|------------------|

**Class, American Window**

Jobbers' List, Dec. 16, 1902.

From store, Single and Double 90¢ to 100¢

P. O. B. factory, carload lots:

Single and Double.....90¢ to 95¢ 1/4

2000 box lots.....90¢ to 95¢

**Glasses, Level—**

|                         |                        |
|-------------------------|------------------------|
| Chapin-Stephens Co..... | 50¢ to 100¢ 10¢ to 10¢ |
|-------------------------|------------------------|

**Glue—Liquid, Fish—**

List A, Bottles or Cans, with Brush.

|   |            |
|---|------------|
| List B, Cans (1/4 pts., pta., qts)..... | 35¢ to 45¢ |
|---|------------|

|                                    |            |
|------------------------------------|------------|
| List C, Cans (1/2 gal., gal.)..... | 25¢ to 45¢ |
|------------------------------------|------------|

|  |            |
|--|------------|
| International Glue Co. (Martin's)..... | 40¢ to 50¢ |
|--|------------|

**Grease, Axle—**

|                   |                       |
|-------------------|-----------------------|
| Common Grade..... | gro. \$5.00 to \$6.00 |
|-------------------|-----------------------|

|                          |                      |
|--------------------------|----------------------|
| Dixon's Everlasting..... | 10 m. pails, ea. 85¢ |
|--------------------------|----------------------|

|                                  |                     |
|----------------------------------|---------------------|
| Dixon's Everlasting, in box..... | \$1.80; 2 m. \$2.00 |
|----------------------------------|---------------------|

**Griddles, Soapstone—**

|                   |                    |
|-------------------|--------------------|
| Pike Mfg. Co..... | 33¢ to 33 1/4¢ 10¢ |
|-------------------|--------------------|

**Grindstones—**

|                            |        |
|----------------------------|--------|
| Bicycle Emery Grinder..... | \$8.50 |
|----------------------------|--------|

|                                |                  |
|--------------------------------|------------------|
| Bicycle Grindstones, each..... | \$2.50 to \$3.00 |
|--------------------------------|------------------|

|                   |   |
|-------------------|---|
| Pike Mfg. Co..... | Improved Family Grindstones, per inch, per doz..... |
|-------------------|---|

|                   |                           |
|-------------------|---------------------------|
| Pike Mfg. Co..... | Pike Mowde Knife and Tool |
|-------------------|---------------------------|

|                    |        |
|--------------------|--------|
| Grinder, each..... | \$3.00 |
|--------------------|--------|

|                                    |                               |
|------------------------------------|-------------------------------|
| Velox Ball Bearing, mounted, Angle | Iron Frames..... each, \$3.25 |
|------------------------------------|-------------------------------|

**Guards, Snow—**

|                               |                              |
|-------------------------------|------------------------------|
| Cleveland Wire Spring Co..... | Galv. Steel 1000..... \$9.00 |
|-------------------------------|------------------------------|

|                  |         |
|------------------|---------|
| Copper 1000..... | \$18.00 |
|------------------|---------|

**Halters and Ties—**

|                     |                     |
|---------------------|---------------------|
| Covert Mfg. Co..... | Web..... 45¢ to 50¢ |
|---------------------|---------------------|

|                |            |
|----------------|------------|
| Jute Rope..... | 40¢ to 45¢ |
|----------------|------------|

|                 |            |
|-----------------|------------|
| Sisal Rope..... | 30¢ to 45¢ |
|-----------------|------------|

|                              |                                  |
|------------------------------|----------------------------------|
| Covert's Saddlery Works..... | Web and Leather Halters..... 70¢ |
|------------------------------|----------------------------------|

|                                   |     |
|-----------------------------------|-----|
| Jute and Manila Rope Halters..... | 70¢ |
|-----------------------------------|-----|

|                         |            |
|-------------------------|------------|
| Sisal Rope Halters..... | 60¢ to 70¢ |
|-------------------------|------------|

|  |     |
|--|-----|
| Jute, Manila and Cotton Rope Ties..... | 70¢ |
|--|-----|

|                      |            |
|----------------------|------------|
| Sisal Rope Ties..... | 60¢ to 70¢ |
|----------------------|------------|

**Riveting and Tinner's**

|                               |                       |
|-------------------------------|-----------------------|
| Sargent's C. S. New List..... | 10¢ to 40¢ 10¢ to 10¢ |
|-------------------------------|-----------------------|

**Heavy Hammers and Sledges—**

|                      |                    |
|----------------------|--------------------|
| 8 lb. and under..... | lb. 45¢ 75¢ to 75¢ |
|----------------------|--------------------|

|                 |              |
|-----------------|--------------|
| 8 to 15 lb..... | lb. 30¢ 100¢ |
|-----------------|--------------|

|                 |         |
|-----------------|---------|
| Over 15 lb..... | lb. 30¢ |
|-----------------|---------|

|                         |                 |
|-------------------------|-----------------|
| Wilkinson's Smiths..... | 94¢ to 100¢ lb. |
|-------------------------|-----------------|

**Handles—****Agricultural Tool Handles—**

|                     |                |
|---------------------|----------------|
| Axe, Pick, etc..... | 45¢ to 50¢ 50¢ |
|---------------------|----------------|

|                     |                |
|---------------------|----------------|
| Hoe, Rake, etc..... | 60¢ to 60¢ 50¢ |
|---------------------|----------------|

|                               |                       |
|-------------------------------|-----------------------|
| Fork, Shovel, Spade, etc..... | Long Handles..... 60¢ |
|-------------------------------|-----------------------|

|                |     |
|----------------|-----|
| D Handles..... | 50¢ |
|----------------|-----|

**Cross-Cut Saw Handles—**

|             |            |
|-------------|------------|
| Atkins..... | 40¢ to 50¢ |
|-------------|------------|

|               |                |
|---------------|----------------|
| Champion..... | 45¢ to 45¢ 10¢ |
|---------------|----------------|

|              |     |
|--------------|-----|
| Diaston..... | 50¢ |
|--------------|-----|

**Mechanics' Tool Handles—**

|                      |                       |
|----------------------|-----------------------|
| Auger, assorted..... | gro. \$2.30 to \$2.50 |
|----------------------|-----------------------|

|              |                       |
|--------------|-----------------------|
| Bradawl..... | gro. \$1.25 to \$1.50 |
|--------------|-----------------------|

|                     |                                  |
|---------------------|----------------------------------|
| Chisel Handles..... | Apple Tanged Firmer, gro. ass'd. |
|---------------------|----------------------------------|

|                                  |  |
|----------------------------------|--|
| Apple Tanged Firmer, gro. ass'd. | \$2.35 to \$2.35; large, \$2.50 to \$2.50. |
|----------------------------------|--|

|                                    |  |
|------------------------------------|--|
| Hickory Tanged Firmer, gro. ass'd. | \$1.75 to \$2.20; large, \$3.50 to \$3.70. |
|------------------------------------|--|

|                                  |  |
|----------------------------------|--|
| Apple Socket Firmer, gro. ass'd. | \$1.70 to \$1.85; large, \$2.00 to \$2.25. |
|----------------------------------|--|

|                                    |  |
|------------------------------------|--|
| Hickory Socket Firmer, gro. ass'd. | \$1.60 to \$1.75; large, \$1.75 to \$2.00. |
|------------------------------------|--|

|                                     |  |
|-------------------------------------|--|
| Hickory Socket Framing, gro. ass'd. | \$2.50 to \$2.75; large, \$3.65 to \$3.85. |
|-------------------------------------|--|

|                     |                       |
|---------------------|-----------------------|
| File, assorted..... | gro. \$1.60 to \$1.15 |
|---------------------|-----------------------|

|                                |     |
|--------------------------------|-----|
| Hammer, Hatchet, Axe, etc..... | 50¢ |
|--------------------------------|-----|

|                               |            |
|-------------------------------|------------|
| Hand Saw, Varnished, doz..... | 70¢ to 70¢ |
|-------------------------------|------------|

|                    |            |
|--------------------|------------|
| Not Varnished..... | 55¢ to 60¢ |
|--------------------|------------|

|                    |   |
|--------------------|---|
| Plane Handles..... | Jack, doz. 25¢; Jack Bolted..... 55¢ to 60¢ |
|--------------------|---|

|  |            |
|--|------------|
| Fore, doz. 35¢ to 38¢; Fore, Bolted..... | 70¢ to 75¢ |
|--|------------|

|                         |                                  |
|-------------------------|----------------------------------|
| Chapin-Stephens Co..... | Carving Tool..... 40¢ to 40¢ 10¢ |
|-------------------------|----------------------------------|

|             |                |
|-------------|----------------|
| Chisel..... | 65¢ to 65¢ 10¢ |
|-------------|----------------|

|                   |                |
|-------------------|----------------|
| File and Awl..... | 65¢ to 65¢ 10¢ |
|-------------------|----------------|

|                   |                |
|-------------------|----------------|
| Screw Driver..... | 40¢ to 40¢ 10¢ |
|-------------------|----------------|

|                                      |                         |
|--------------------------------------|-------------------------|
| Millers Falls Adj. and Hatchet Auger | Handles..... 15¢ to 10¢ |
|--------------------------------------|-------------------------|

|                                       |                       |
|---------------------------------------|-----------------------|
| Nicholson Simplicity File Handle..... | gro. \$0.85 to \$1.50 |
|---------------------------------------|-----------------------|

**Hangers—**

|                               |                  |
|-------------------------------|------------------|
| Barn Door, New Pattern, Round | Groove, Regular: |
|-------------------------------|------------------|

|           |           |
|-----------|-----------|
| Inch..... | 3 4 5 6 8 |
|-----------|-----------|

|                 |                         |
|-----------------|-------------------------|
| Single Doz..... | 80¢ 1.20 1.50 1.90 2.30 |
|-----------------|-------------------------|

|                                 |                      |
|---------------------------------|----------------------|
| Barn Door, New England Pattern, | Check Back, Regular: |
|---------------------------------|----------------------|

|           |         |
|-----------|---------|
| Inch..... | 3 4 5 6 |
|-----------|---------|

|                 |                       |
|-----------------|-----------------------|
| Single Doz..... | \$1.10 1.60 2.15 2.70 |
|-----------------|-----------------------|

|                     |                  |
|---------------------|------------------|
| Albitt Mfg. Co..... | per doz. \$15.00 |
|---------------------|------------------|

|                             |                   |
|-----------------------------|-------------------|
| Chicago Spring Butt Co..... | Friction..... 25¢ |
|-----------------------------|-------------------|

|                  |     |
|------------------|-----|
| Oscillating..... | 25¢ |
|------------------|-----|

|               |     |
|---------------|-----|
| Big Twin..... | 35¢ |
|---------------|-----|

|                               |     |
|-------------------------------|-----|
| Chisholm & Moore Mfg. Co..... | 50¢ |
|-------------------------------|-----|

|                       |     |
|-----------------------|-----|
| Baggage Car Door..... | 40¢ |
|-----------------------|-----|

|               |     |
|---------------|-----|
| Elevator..... | 45¢ |
|---------------|-----|

|               |     |
|---------------|-----|
| Railroad..... | 55¢ |
|---------------|-----|

|                              |     |
|------------------------------|-----|
| Cronk & Carrier Mfg. Co..... | 60¢ |
|------------------------------|-----|

|                 |     |
|-----------------|-----|
| Loose Axle..... | 60¢ |
|-----------------|-----|

|                     |             |
|---------------------|-------------|
| Roller Bearing..... | 60¢ to 100¢ |
|---------------------|-------------|

|                    |                                 |
|--------------------|---------------------------------|
| Lane Bros. Co..... | Parlor Ball Bearing..... \$4.15 |
|--------------------|---------------------------------|

|                       |        |
|-----------------------|--------|
| Parlor, Standard..... | \$3.35 |
|-----------------------|--------|

|                        |        |
|------------------------|--------|
| Parlor, New Model..... | \$3.85 |
|------------------------|--------|

|                          |        |
|--------------------------|--------|
| Parlor New Champion..... | \$2.25 |
|--------------------------|--------|

|                          |                        |
|--------------------------|------------------------|
| Barn Door, Standard..... | 50¢ to 100¢ 10¢ to 10¢ |
|--------------------------|------------------------|

|              |                        |
|--------------|------------------------|
| Covered..... | 50¢ to 100¢ 10¢ to 10¢ |
|--------------|------------------------|

|              |                        |
|--------------|------------------------|
| Special..... | 50¢ to 100¢ 10¢ to 10¢ |
|--------------|------------------------|

|                    |                  |
|--------------------|------------------|
| Lawrence Bros..... | Advance..... 40¢ |
|--------------------|------------------|

|                |             |
|----------------|-------------|
| Cleveland..... | 60¢ to 100¢ |
|----------------|-------------|

|            |     |
|------------|-----|
| Crown..... | 60¢ |
|------------|-----|

|            |             |
|------------|-------------|
| Grant..... | 50¢ to 100¢ |
|------------|-------------|

|               |     |
|---------------|-----|
| New York..... | 60¢ |
|---------------|-----|

|               |             |
|---------------|-------------|
| Peerless..... | 60¢ to 100¢ |
|---------------|-------------|

|               |     |
|---------------|-----|
| Sterling..... | 60¢ |
|---------------|-----|

|                    |             |
|--------------------|-------------|
| Swing, No. 95..... | 50¢ to 100¢ |
|--------------------|-------------|

|                    |                   |
|--------------------|-------------------|
| Union, No. 44..... | \$5.00 to \$7.00; |
|--------------------|-------------------|

|             |         |
|-------------|---------|
| No. 46..... | \$6.00. |
|-------------|---------|

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|-----------------------|----------------------------|
| McKinney Mfg. Co..... | No. 1, Special..... \$1.50 |
|-----------------------|----------------------------|

|                      |                |
|----------------------|----------------|
| No. 2, Standard..... | \$1.80 to 100¢ |
|----------------------|----------------|

|                     |               |
|---------------------|---------------|
| Hinged Hangers..... | \$1.60 to 50¢ |
|---------------------|---------------|

|                             |                   |
|-----------------------------|-------------------|
| Meyers' Stayon Hangers..... | 50¢ to 100¢ (net) |
|-----------------------------|-------------------|

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|--------------------------|------------------------------------|
| C. S. Smith Mfg. Co..... | Lundy Parlor Door..... 50¢ to 100¢ |
|--------------------------|------------------------------------|

|                        |             |
|------------------------|-------------|
| Monarch Barn Door..... | 50¢ to 100¢ |
|------------------------|-------------|

|                       |             |
|-----------------------|-------------|
| Never Jump Hinge..... | 50¢ to 100¢ |
|-----------------------|-------------|

|               |             |
|---------------|-------------|
| Peerless..... | 60¢ to 100¢ |
|---------------|-------------|

|                 |            |
|-----------------|------------|
| Perfection..... | 70¢ to 80¢ |
|-----------------|------------|

|              |            |
|--------------|------------|
| Phoenix..... | 70¢ to 80¢ |
|--------------|------------|

|                          |             |
|--------------------------|-------------|
| Wagner's Adjustable..... | 70¢ to 100¢ |
|--------------------------|-------------|

|                              |     |
|------------------------------|-----|
| Warehouse Anti-Friction..... | 60¢ |
|------------------------------|-----|

|                       |                                      |
|-----------------------|--------------------------------------|
| Richards Mfg. Co..... | Pioneer Wood Track No. 3..... \$2.25 |
|-----------------------|--------------------------------------|

|                             |        |
|-----------------------------|--------|
| Imp'd Wood Track No. 5..... | \$2.25 |
|-----------------------------|--------|

|                              |        |
|------------------------------|--------|
| Imp'd Steel Track No. 7..... | \$2.70 |
|------------------------------|--------|

|                              |        |
|------------------------------|--------|
| Imp'd Steel Track No. 7..... | \$2.65 |
|------------------------------|--------|

|                                   |        |
|-----------------------------------|--------|
| Ball B'r'g Steel Track No. 9..... | \$2.50 |
|-----------------------------------|--------|

|                                    |        |
|------------------------------------|--------|
| Ball B'r'g Steel Track No. 10..... | \$2.50 |
|------------------------------------|--------|

|                                      |        |
|--------------------------------------|--------|
| Roller B'r'g Steel Track No. 11..... | \$2.45 |
|--------------------------------------|--------|

|                                      |        |
|--------------------------------------|--------|
| Roller B'r'g Steel Track No. 12..... | \$2.40 |
|--------------------------------------|--------|

|                                    |        |
|------------------------------------|--------|
| Ball B'r'g Steel Track No. 13..... | \$2.35 |
|------------------------------------|--------|

|                                      |        |
|--------------------------------------|--------|
| Roller B'r'g Steel Track No. 14..... | \$2.35 |
|--------------------------------------|--------|

|                                      |     |
|--------------------------------------|-----|
| Ball B'r'g Trolley Track No. 15..... | 40¢ |
|--------------------------------------|-----|

|                                      |     |
|--------------------------------------|-----|
| Ball B'r'g Trolley Track No. 19..... | 40¢ |
|--------------------------------------|-----|

|                   |                |
|-------------------|----------------|
| Ball Bearing..... | Tandem Trolley |
|-------------------|----------------|

|                   |     |
|-------------------|-----|
| Track No. 16..... | 40¢ |
|-------------------|-----|

|                                    |     |
|------------------------------------|-----|
| Slant Adjustable Track No. 18..... | 40¢ |
|------------------------------------|-----|

|                                   |     |
|-----------------------------------|-----|
| Auto Adjustable Track No. 22..... | 40¢ |
|-----------------------------------|-----|

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**Wire Coat and Hat:**  
Ame. .... 60¢  
B. B. .... 60¢  
V. Grace, Chief and Czar. .... 60¢  
Gem. .... 60¢  
Bright Wire Goods—See Wire.

### Wrought Iron—

Box, 6 in., per doz. \$1.00; 8 in., \$1.25;  
10 in., \$2.50.  
Cotton ..... doz. \$1.05@1.25  
Wrought Staples, Hooks, &c. ....  
See Wrought Goods.

### Miscellaneous—

Bush, Light, doz. \$5.50; Medium, \$6.00; Heavy, \$6.50.  
Grass, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.  
Best, ..... \$1.50 1 75 2.00  
Common, ..... \$1.30 1.30 1.40 1.60  
Potato and Manure ..... 60¢@70¢  
Whiffletree, ..... 10. 50¢  
Hooks and Eyes: .....  
Brass, ..... 60¢@10¢@10¢@70¢  
Malleable Iron ..... 70¢@50¢@70¢@10¢  
Covert Saddlery Works' Self Locking Gate and Door Hook ..... 60¢  
Ft. Madison Cut-Easy Corn Hooks .....  
Crown Picture ..... 50¢@10¢  
Bench Hooks—See Bench Staps.  
Corn Hooks—See Knives, Corn.

### Horse Nails—See Nails, Horse

### Horseshoes—

See Shoes, Horse.

### Hose Rubber—

Garden Hose, 3/4-inch: .....  
Competition ..... ft. 4 1/4 @ 4 1/4 c  
3-ply Standard ..... ft. 6 @ 6 1/4 c  
4-ply Standard ..... ft. 7 1/4 @ 8 c  
2-ply extra ..... ft. 8 1/4 @ 9 c  
4-ply extra ..... ft. 10 1/4 @ 11 c  
Cotton Garden, 3/4-in., coupled: .....  
Low Grade ..... ft. 6 @ 7 c  
Fair quality ..... ft. 8 @ 9 c

### Irons—Sad—

From 1 to 10 ..... lb. 2 1/4 @ 3 c  
B. B. Sad Irons ..... lb. 3 @ 3 1/4 c  
Chinese Laundry ..... lb. 4 1/4 @ 5 c  
Chinese Sad ..... lb. 3 1/4 @ 4 c  
Mrs. Potts', per set: .....  
Nos. 50 55 60 65  
Jap'd Tops ..... 70 75 80 85 c  
Tin'd Tops ..... 70 75 80 85 c  
New England Pressing, lb. 3 1/4 @ 3 1/2 c

### Pinking—

Pinking Irons ..... doz. 50 @ 60 c

### Soldering—

Soldering Coppers 1/2 and 3/4 and 5/8 ..... 21 @ 22 c  
1 1/2 and 2 ..... 25 @ 26 c  
Covert Mfg. Co. .... 20 @ 25 c

### Jacks, Wagon—

Covert Mfg. Co.: .....  
Auto Screw ..... 30 @ 55 c  
Steel ..... 45 @ 25 c  
Covert's Saddlery Works': .....  
Daisy ..... 60 @ 105 c  
Victor ..... 60 @ 105 c  
Lockport ..... 50 @ 105 c  
Lane's Steel ..... 30 @ 105 c

### Kettles—

Brass, Spun, Plain, ..... 20 @ 25 c  
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

Butcher, Kitchen, &c.: .....  
Foster Bros' Butcher, &c. .... 30¢  
Hartwell Cutlery Co. .... 50¢  
Smith & Hemenway Co. .... 40¢@15¢  
Hay and Straw—See Hay Knives.

### Corn—

Withington Acme, per doz., \$2.65; Dent, \$2.75; ad. serrated, \$2.20; Serrated, \$1.10; Yankee No. 1, \$1.50; Yankee No. 2, \$1.15.

### Drawing—

Standard List ..... 70¢@5¢@70¢@10¢  
Bradley's .....  
J. E. Jennings & Co. Nos. 45, 46, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.  
Jennings & Griffin, Nos. 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.  
Vetrous ..... 10¢@10¢@25¢  
L. J. White ..... 20¢@25¢@25¢

### Hay and Straw—

Lightning ..... per doz. \$6.50 @ 7.00  
Wan's Sickle Edge ..... per doz. \$6.50 @ 7.00  
Wan's Serrated ..... per doz. \$6.50 @ 7.00  
Maine ..... per doz. \$6.50 @ 7.00

### Mincing—

Buffalo ..... per gro. \$13.00

### Miscellaneous—

Farriers' ..... doz. \$2.00 @ 3.00  
Woolenholm's ..... per doz. \$3.00 @ 3.25

### Knobs—

Base, 2 1/4-inch, Birch, or Maple, Rubber tip, gro. .... \$1.10 @ 1.20  
Carriage, Jap. all sizes, gro. 25 @ 30 c  
Door, Mineral ..... doz. 65 @ 70 c  
Door, Por. Jap'd ..... doz. 70 @ 75 c  
Door, Por. Nickel ..... doz. 82 @ 85 c  
Hardale's Wood Door, Shutter, &c. .... 105 c  
Picture, Sargent's ..... 60¢@105 c

### Lacing Leather—

See Lacing Leather.

### Ladders Step Etc.—

Iane's Store ..... 25¢  
Myers Noiseless Store Ladders ..... 30¢

### Ladies—Melting—

L. & W. Mfg. Co. .... 25¢  
P. B. & W. .... 50¢  
Reading ..... 60¢  
Sargent's ..... 45¢@105 c

### Lanterns—Tubular—

Regular Tubular No. 0, doz. \$4.35 @ 4.75  
Light Tubular, No. 0, doz. \$4.75 @ 5.25  
Hinge Tubular, No. 0, doz. \$4.75 @ 5.25  
Other Styles ..... 10¢@10¢@10¢@10¢

### Bull's Eye Police—

No. 1, 2 1/4 inch ..... \$9.50 @ 9.75  
No. 2, 3 inch ..... \$2.75 @ 3.00

### Latches—Gate—

Hoffman's Safety Gate ..... per doz. 60¢

### Thumb—

Roggin's Latches, with the screw, \$3.50 @ 4.00

### Leaders—Cattle—

Small ..... doz. 55¢; large, 60¢  
Covert Mfg. Co. .... 55¢@25¢

### Lifters, Transom—

R. & E. .... 33¢@45¢

### Lines—

Wire Clothes, Nos. 18 19 20  
100 feet ..... \$2.20 2.00 1.65  
75 feet ..... \$1.80 1.70 1.30

Ossawa Mills.  
Crown Solid Braided Chalk ..... 33¢@45¢  
Mason's, No. 0 to No. 5 ..... 33¢@45¢  
Samson Cordage Works:  
Solid Braided Chalk, No. 0 to 3, 405  
Silver Lake Braided Chalk, No. 0, \$6.00;  
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50;  
No. 4, \$8.00; No. 5, \$8.50.  
Anniston Waterproof Clothes, 50 ft., \$  
gro. \$22.00; Gill Edge, \$30.00; Air Lin.  
\$28.00; Acme, \$15.00; Alabama, \$15.00;  
Empire, \$13.50; Advance, \$13.50; All-  
ston, \$11.50; Calhoun, \$10.00; Orloff,  
\$9.00; Albermarle, \$25.50; Eclips, \$  
\$11.00; Chicago, \$10.00; Standard,  
\$9.00; Columbia, \$8.00.

### Locks—Cabinet—

Cabinet Locks ..... 33¢@35¢@45¢@75¢

Door Locks, Latches, &c.—  
[Not prices are very often made on  
these goods.]  
Reading Hardware Co. .... 50¢  
R. & E. Mfg. Co. .... 40¢  
Sargent & Co. .... 40¢@40¢@105 c

### Elevator—

Stowell's ..... 40¢

### Padlocks—

Wrought Iron ..... 7¢@10¢@50¢@50¢  
R. & E. Mfg. Co. Wrt. Steel and Brass ..... 75¢@75¢@105 c

### Sash, &c.—

Ives' Patent: .....  
Bronze and Brass ..... 55¢@75¢  
Crescent ..... 50¢  
Iron ..... 60¢@25¢  
Wrought Bronze and Brass ..... 50¢@55¢  
Wrought Steel ..... 55¢  
Reading ..... 80¢@105¢@105 c

### Machines—Boring—

Com., Upright, Without Augers, \$2.00  
Com., Angular, Without Augers, \$2.25

R. & E. Mfg. Co.: Upright, Angular,  
Improved No. 3, \$4.25 No. 1, \$5.00  
Improved No. 4, 3.75 No. 2, 3.38  
Improved No. 5, 2.75  
Jennings' No. 4, 3.15 No. 1, 8.50  
Miller's Falls, No. 4, 5.75  
Snell's, Rice's Pat., No. 4, 2.75

### Hoisting—

Moore's Anti-Friction Differential Pul-  
ley Block ..... 30¢  
Moore's Hand Hoist, with Lock Brake, 205  
Moore's Portable Pneumatic Hoist, 255

### Ice Cutting—

Chandler's ..... 15¢@105 c

### Washing—

Boss Washing Machine Co.: Per doz.  
Boss No. 1; Boss Ro. ar. .... \$57.10  
Boss No. 7; Dietz Rotary ..... 60.00  
Champion Rotary; Banner No. 1, 45.00  
Standard Champion No. 1, 48.00  
Standard Perfection ..... 26.00  
Civil Square Western ..... 30.00  
Uneda American, Ro. ind. .... 29.00

### Mallets—

Hickory ..... 45¢@50¢  
Lignumvita ..... 45¢@50¢  
Tinnars', Hickory and Applewood,  
doz. .... 60¢@50¢

### Mats—Door—

Elastic Steel (W. G. Co.) ..... 105 c

### Mattocks—

See Picks and Mattocks.

### Menders Hose

Robinson's Hose Menders ..... per gro. \$2.00

### Milk Cans—See Cans, Milk

### Mills—Coffee, etc.—

Enterprise Mfg. Co. .... 25¢@30¢  
Hoffman's Side, Coffee and Spice .....  
National, list Jan. 1, '94 ..... per doz. \$1.25  
Parker's Columbia & Victoria, 50¢@10¢@40¢  
Parker's Box and Side ..... 50¢@10¢@40¢  
Sun, No. 109, 1 lb. mill. .... per doz. \$3.00  
Swift, Lane Bros Co. .... 30¢

### Mowers, Lawn—

Net prices are generally quoted.  
Cheap ..... all sizes. \$1.90 @ 1.95  
Good ..... all sizes. \$2.25 @ 2.50  
10 12 14 16-inch  
High Grade 4.25 4.50 4.75 5.00  
Continental ..... 40¢@105 c  
Great American ..... 7¢  
Great American Ball Bearing ..... 60¢@105 c  
Quaker City ..... 70¢  
Pennsylvania ..... 40¢@105 c  
Pennsylvania Ball Bearing ..... 60¢@105 c  
Pennsylvania Golf ..... 40¢  
Pennsylvania Horse ..... 40¢  
Pennsylvania Pony ..... 45¢  
Philadelphia:  
Styles M. S. C. K. T. .... 70¢@105 c  
Style R. High Wheel ..... 60¢@105 c  
Brexel and Gold Coin, low list. .... 50¢@55 c

### Nails—

Cut and Wire. See Trade Report.  
Wire Nail and Brads, Padded.  
List July 10, 1899. 35¢@10¢@10¢@90¢  
Hungarian, Finishing, Upholster-  
ers', &c. See Tacks.

### Horse—

Nos. 6 7 8 9 10  
A. C. .... 25¢ 23¢ 22¢ 21¢ 21¢ ..... 40¢@35¢  
Amble ..... 25¢@25¢ 25¢ 24¢ 23¢ ..... 50¢@105 c  
C. B. K. .... 25¢ 25¢ 23¢ 21¢ 21¢ ..... 40¢  
Champion in 28¢ 26¢ 25¢ 24¢ 23¢ 21¢ 21¢ ..... 50¢  
Clinton ..... 10¢ 17¢ 16¢ 15¢ 14¢ 13¢ 10¢@5¢  
Maud S. .... 25¢ 33¢ 29¢ 21¢ 21¢ ..... 50¢  
Putnam ..... 23¢ 21¢ 20¢ 19¢ 18¢ ..... 33¢@45¢

### Putnam

Cold Roll'd 19¢ 18¢ 17¢ 16¢ ..... 10¢@105 c  
American, Nos. 5 to 10 per lb. .... 9¢@9¢  
Neponset, Nos. 5 to 10 per lb. .... 12¢  
Jobbers' special brands, per lb. 8¢@30¢

### Picture

Brass Head, 1 1/2 2 1/2 3 3 1/2 in.  
Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.  
Por. Head, ..... 1.10 1.10 1.10 ..... gro.  
Crown Picture Nails ..... 10¢@15¢

### Nippers, See Pliers and Nippers.

### Nuts—

Cold Punched: ..... Off list.  
Mfrs. or U. S. Standard. .... \$1.50  
Square, plain, ..... \$1.50  
Hexagon, plain, ..... \$1.50  
Square, C. T. & R. .... \$1.70  
Hexagon, C. T. & R. .... \$5.00

### Hot Pressed:

Mfrs., U. S. or Nar, Gauge Stand.  
Square Blank ..... \$4.80  
Hexagon Blank ..... \$5.00  
Square Tapped ..... \$4.60  
Hexagon Tapped ..... \$4.80

### Oakum—

Best or Government ..... lb. 6 1/4 c  
Navy ..... lb. 4 1/4 c  
U. S. Navy ..... lb. 6 1/4 c  
Plumbers' Spun Oakum ..... 2 1/4 c  
In carload lots 1/4 lb. off f.o.b. New York.

### Oil Tanks—See Tanks, Oil.

### Oilers—

Brass and Copper ..... 65¢@65¢@105 c  
Tin or Steel ..... 70¢@105 c  
Zinc ..... 75¢@75¢@105 c

### Chase or Paragon:

Brass and Copper ..... 60¢@105 c  
Tin or Steel ..... 75¢@75¢@105 c  
Zinc ..... 75¢@75¢@105 c

Malleable, Hammers' Improved, No. 1,  
\$3.00; No. 2, \$4; No. 3, \$4.40 per doz. 205  
Malleable, Hammers' Old Pattern,  
same list ..... 50¢@105 c  
Ame. L. N. Tube & Stamping Co.:  
Spring Bottom Cans ..... 70¢@70¢@105 c  
Railroad Oilers etc. .... 60¢@60¢@105 c

### Openers—Can—

French ..... doz. 35¢  
Iron Handle ..... doz. 25¢@27¢  
Sprague, Iron Handle, per doz. 35¢@40¢  
Sardine Scissors, doz. \$1.75 @ \$3.00  
Marvel ..... per doz. \$1.25  
National ..... 50¢  
Stowell's ..... per doz. 35¢@45¢  
Tip Top ..... per doz. \$0.75

### Egg—

Nickel Plate ..... per doz., \$2.25  
Silver Plate ..... per doz., \$3.50

### Packing—

Asbestos Packing, Wick and Rope,  
L @ 15 1/2 c lb.

### Rubber—

Sheet, C. I. .... 8¢@12¢  
Sheet, C. O. S. .... 9¢@15¢  
Sheet, C. B. S. .... 10¢@15¢  
Sheet, Pure Gum ..... 50¢@70¢  
Shr. of Red ..... 55¢@40¢  
Jenkins' Standard, 2 1/2 3 1/2 4 1/2 5 1/2 6 1/2 7 1/2 8 1/2 9 1/2 10 1/2 11 1/2 12 1/2 13 1/2 14 1/2 15 1/2 16 1/2 17 1/2 18 1/2 19 1/2 20 1/2 21 1/2 22 1/2 23 1/2 24 1/2 25 1/2 26 1/2 27 1/2 28 1/2 29 1/2 30 1/2 31 1/2 32 1/2 33 1/2 34 1/2 35 1/2 36 1/2 37 1/2 38 1/2 39 1/2 40 1/2 41 1/2 42 1/2 43 1/2 44 1/2 45 1/2 46 1/2 47 1/2 48 1/2 49 1/2 50 1/2 51 1/2 52 1/2 53 1/2 54 1/2 55 1/2 56 1/2 57 1/2 58 1/2 59 1/2 60 1/2 61 1/2 62 1/2 63 1/2 64 1/2 65 1/2 66 1/2 67 1/2 68 1/2 69 1/2 70 1/2 71 1/2 72 1/2 73 1/2 74 1/2 75 1/2 76 1/2 77 1/2 78 1/2 79 1/2 80 1/2 81 1/2 82 1/2 83 1/2 84 1/2 85 1/2 86 1/2 87 1/2 88 1/2 89 1/2 90 1/2 91 1/2 92 1/2 93 1/2 94 1/2 95 1/2 96 1/2 97 1/2 98 1/2 99 1/2 100 1/2

### Miscellaneous

American Packing ..... 7¢@10¢ lb.  
Cotton Packing ..... 13¢@15¢ lb.  
Italian Packing ..... 9¢@15¢ lb.  
Jute ..... 3 1/4¢@15¢ lb.  
Russia Packing ..... 7¢@15¢ lb.

### Pails—

S. S. & Co., with gauges, No. 1 \$6.25;  
No. 2, \$5.50 per doz.

### Galvanized—

Price per doz.

Quart. .... 10 12 14  
Water, Regular ..... 1.50 1.75 2.00  
Water, Heavy ..... 2.75 3.00 3.25  
Fire, Rd. Bottom, 2 3/4 2 1/2 2 1/4  
Well ..... 2.25 2.50 2.75

### Pans—

Standard List ..... 60¢@50¢@60¢@105 c

### Fry—

Common Lipped:  
No. 1 2 3 4 5  
Per doz. \$0.95 1.05 1.15 1.20 1.35  
Roasting and Baking:  
Reed, S. S. & Co., per doz. Nos. 1, \$4.50;  
10 \$3.25; 20 \$7.50; 30 \$6.25.  
Simplex, per doz.:  
No. 40 50 60 140 150 160  
\$2.75 3.25 3.75 3.00 3.25 4.00

### Paper—Building Paper—

Asbestos ..... lb.  
Building Felt ..... 2 1/4 c  
Mill Board, sheet, 40 x 40 inches 3 1/4 c  
Mill Board, roll, thicker than 1-16  
inch ..... 3 1/4 c  
Mill Board, roll, 1-16 in. thick and  
less ..... 2 1/4 c

Per roll  
Rosin Sized Sheathing: 500 sq. ft.  
Light wt. 25 lbs. to roll, \$0.45 @ 0.50  
Medium wt. 30 lbs. to roll, \$0.48 @ 0.55  
Heavy wt. 40 lbs. to roll, \$0.68 @ 0.75  
Black Water Proof Sheathing, 500  
sq. ft. 1 ply, 6c; 2 ply, 85c; 3  
ply, 1.10; 4 ply, 1.25.  
Deafening Felt, 9, 6 and 4 1/4 sq. ft.  
to lb., ton ..... \$4.00  
Red Rope Roofing, 250 sq. feet per  
roll ..... \$1.65  
NOTE.—These goods are often sold at  
delivered prices.

Stanley's Duplex..... 20@20&10&10¢  
Woods' Extension..... 33¢

**Poachers, Egg—**  
Buffalo Steam Egg Poachers, per doz.,  
No. 1, \$4.00; No. 2, \$3.00; No. 3,  
\$2.00; No. 4, \$1.20.

**Points, Glaziers—**  
Bulk and 1 lb. papers..... 3¢@4¢  
1/2-lb. papers..... 1¢  
1/4-lb. papers..... 1/2¢

**Pokes, Animal—**  
Ft. Madison Hawkeye..... per doz. \$3.25  
Ft. Madison Western..... per doz. \$3.40

**Police Goods—**  
Manufacturers' Lists..... 25¢@25¢  
Towers..... 25¢

**Polish—Metal—**  
Prestolite Liquid, No. 1 (1/2 pt.), per doz.,  
\$3.00; No. 2 (1 qt.), \$9.75; 40¢  
Prestolite Paste..... 40¢@10¢  
George William Hoffman:  
U. S. Metal Polish Paste, 3 oz. boxes, per  
doz. \$2.50; 1/2 oz. boxes, per doz. \$2.25;  
U. S. Liquid, 8 oz. cans, per doz. \$1.25;  
per gr. \$12.00.  
Barkeepers' Friend Metal Polish, per doz.  
\$1.75; per gr. \$18.00.  
Wynn's White Silk, 1/4 pt. cans, per  
doz. \$2.00

**Stove—**  
Black Eagle Benzine Paste, 5 lb. cans.....  
10¢  
Black Eagle, Liquid, 1/2 pt. cans per doz. 75¢  
Black Jack Paste, 1/2 lb. cans, per doz. \$9.00  
Ladd's Black Beauty, gr. \$10.00..... 50¢  
Joseph Dixon's, per gr. \$5.75..... 10¢  
Jaxon's Plumbago..... per gr. \$2.50  
Fireside..... per gr. \$2.50  
Gem, per gr. \$4.50..... 10¢  
Japanese..... per gr. \$3.50  
Jet Black..... per gr. \$3.50  
Peerless Iron Enamel, 1/4 pt. cans, per  
doz. \$1.50

**Wynn's—**  
Black Silk, 5 lb. pail..... each 70¢  
Black Silk, 1/2 lb. box..... per doz. \$1.00  
Black Silk, 5 oz. box..... per doz. \$0.75  
Black Silk, 1/2 pt. liq..... per doz. \$1.00

**Poppers, Corn—**  
1 qt., Square..... gro. \$9.00  
1 qt., Round..... gro. \$10.00  
1 1/2 qt., Square..... gro. \$11.00  
2 qt., Square..... gro. \$13.00

**Post Hole and Tree Augers and Diggers—**  
See also Diggers, Post Hole, &c.

**Posts, Steel—**  
Steel Fence Posts, each, 5 ft., 42¢; 6  
ft., 46¢; 6 1/2 ft., 48¢.  
Steel Hitching Posts, each..... \$1.30

**Potato Parers—**  
See Parers, Potato.

**Pots—Glue—**  
Enameled..... 40¢  
Tinned..... 50¢

**Powder—**  
In Cans:  
Duck, 1 lb. each..... 15¢  
Fine Sporting, 1 lb. each..... 15¢  
Rifle, 1/2 lb. each..... 15¢  
Rifle, 1 lb. each..... 15¢  
King's Semi-Smokeless:  
Keg (25 lb. bulk)..... \$3.50  
Half Keg (12 1/2 lb. bulk)..... \$3.50  
Quarter Keg (6 1/4 lb. bulk)..... \$1.90  
Case 24 (1 lb. cans bulk)..... \$8.50  
Half case (1 lb. cans bulk)..... \$4.50  
King's Smokeless:  
Keg (25 lb. bulk)..... \$12.00  
Half Keg (12 1/2 lb. bulk)..... 6.25  
Quarter Keg (6 1/4 lb. bulk)..... 3.25  
Case 24 (1 lb. cans bulk)..... 17.00  
Half case (1 lb. cans bulk)..... 8.75  
Robin Hood Shot Gun..... 50¢@20¢

**Presses—**  
**Fruit and Jelly—**  
Enterprise Mfg. Co..... 20¢@25¢  
Sensibite..... 35¢  
2 qt., \$2.00; 4 qt., \$4.00; 10 qt., \$6.00 each.

**Seal Presses—**  
Morrell's No. 1, per doz. \$20.00..... 50¢  
Morrell's No. 2, per doz. \$22.50..... 50¢

**Pruning Hooks and Shears—See Shears.**  
**Pullers Nail—**

Cyclops..... 50¢  
Miller's Falls, No. 3, per doz. \$12.00..... 50¢

Pearson, No. 1, Cyclone Spike Puller,  
each \$37.50..... 50¢  
Peucan, per doz. \$9.00..... 40¢@10¢  
Seranton, Case Lots:

No. 1 (large), per doz. \$6.50; No. 2 (large),  
\$5.75; No. 3 (small), \$5.00; No. 2-B (large),  
\$5.50; No. 2-B (small), \$4.50; No. 2-D  
(large), \$4.50; No. 3-D (small), \$4.00.  
Smith & Hemenway Co.:

Alex..... 60¢  
Diamond B, No. 2, case lots, per doz. \$4.00  
Diamond B, No. 3, case lots, per doz. \$5.50  
Eureka..... 30¢  
Giant, No. 1, per doz. \$18; No. 2, \$15.00;  
No. 3, \$15..... 40¢  
Yankee..... 60¢@5¢

**Pulleys—Single Wheel—**  
Inch..... 2¢@3¢  
Attaching, doz. \$9.55; 1.15  
Hay Fork, Steel or Solid Eye.....  
doz., 4 in., \$1.15; 5 in., \$1.40

Inch..... 2¢@3¢  
Hot House, doz. \$0.70; 1.25  
Inch..... 1¢@1 1/4¢  
Src. r..... doz. \$0.16; 1.90; 3.80

Inch..... 2¢@3¢  
Side..... doz. \$0.30; 1.40; 5.50; 6.15  
Inch..... 1¢@1 1/4¢  
Tackle..... doz. \$1.30; 1.30; 1.50

**Stowell's—**  
Ceiling or End, Anti-Friction..... 60¢  
Dumb Waiter, Anti-Friction..... 60¢@10¢  
Hay Fork, Anti-Friction, 5-in. Wheel,  
per doz. \$12.00..... 50¢  
Electric Light..... 60¢  
Side, Anti-Friction..... 60¢@10¢

## Sash Pulleys—

**Common Frame: Square or Round**  
End, per doz., 1 1/4 in., 1 1/2 in., 1 3/4 in., 1 1/2 in.  
Auger Mortise, no Face Plate, e, per  
doz., 1 1/4 in., 1 1/2 in., 1 3/4 in., 1 1/2 in.  
Auger Mortise, with Face Plate, per  
doz., 1 1/4 in., 1 1/2 in., 1 3/4 in., 1 1/2 in.  
Acme..... 1 1/4 in., 1 1/2 in., 1 3/4 in., 1 1/2 in., 1 3/4 in.  
Common Sense, 1 1/4 in., per doz., 1 1/2 in., 1 3/4 in.  
2 in., 20¢  
Fox-All-Steel, Nos. 3 and 7, 2 in., per doz. 25¢  
Grand Rapids All Steel Noiseless..... 30¢  
Ideal No. 13..... 1 1/4 in., 1 1/2 in., 1 3/4 in., 1 1/2 in.  
Niagara..... 1 1/4 in., 1 1/2 in., 1 3/4 in., 1 1/2 in.  
No. 20, Troy..... 1 1/4 in., 1 1/2 in., 1 3/4 in., 1 1/2 in.  
Star..... 1 1/4 in., 1 1/2 in., 1 3/4 in., 1 1/2 in.  
Tackle Blocks—See Blocks.

## Pumps—

**Cistern..... 60¢@10¢**  
**Pitcher Spout..... 75¢@10¢**  
**Wood..... 50¢@10¢**  
**Pump Leathers, Lower and Plunger**  
**Valves—Per Gro.: 2 1/4 3 1/4 3 1/4 3 1/4**  
**Inch..... \$2.30 2.50 2.75 3.00**  
**Inch..... \$3.30 3.60 3.85 4.10 4.50**  
Barnes Dbl. Acting (low list)..... 50¢  
Contractors' Rubber Diaphragm No. 2  
R. & L. Block Co..... \$16.00  
Fint & Walling's Fast Mail low list..... 35¢  
Fint & Walling's Pitcher Spout..... 75¢  
Loud's Suction Pumps, D. H. Co..... 20¢  
Myer's Pumps, low list..... 50¢  
Myer's Power Pumps..... 50¢  
Daisy Spray Pump..... per doz. \$7.50  
Myer's Spray Pumps..... 70¢@10¢

## Punches—

**Saddlers' or Drive, good, doz. 65¢@70¢**  
**Spring, single tube, good quality..... \$1.75@2.00**  
**Revolving (4 tubes)..... doz. \$3.75@4.00**  
Bemis & Call Co.'s Cast Steel Drive..... 50¢  
Bemis & Call Co.'s Check..... 55¢  
Bemis & Call Co.'s Spring..... 50¢  
Morrell's No. 1 (A. B. C.), per doz., \$15.00..... 30¢  
No. 2, per doz. \$2.50..... 40¢  
No. 2, Metal, per doz., \$4.00..... 50¢  
Bench Punch, each, \$4.00..... 50¢  
Niagara Hollow Punches..... 40¢  
Niagara Solid Punches..... 55¢@10¢  
Steel Screw, B. & K. Mfg. Co..... 40¢  
Tinner's Hollow, P. S. & W. Co., \$3.50@3.55  
Tinner's Solid, P. S. & W. Co., per doz.,  
\$1.44..... 60¢

## Rail—Barn Door, &c.—

**Cast Iron, Barn Door: Flange Screw**  
**Holes for Rd. Groove Wheels:**  
1/2 5/8 3/4 in.  
\$1.70 \$2.10 \$3.00 100 feet.  
**Angular for Sq. Groove Wheels:**  
Small Med. Large.  
\$1.00 1.95 2.70 100 feet.  
**Sliding Door, Brnzd Wrt Iron, ft. 6 1/2**  
**Sliding Door, Iron Painted..... \$2.40@3¢**  
**Sliding Door, Wrought Brass, 1 1/4**  
**in..... lb. 36¢..... 30¢**  
Allith Mfg. Co. Reliable Hanger Track.....  
2 foot..... 10¢  
Cronk's Double Braced Steel Rail, 3/4  
foot..... 34¢  
Cronk's O. N. T., 100 ft., 1 inch, \$3.10;  
1 1/4 inch, \$4.90; 1 1/2 inch, \$4.85.  
Lance's Standard, 100 ft..... \$7.75  
Lawrence Bros. New York..... ft. 4¢  
McKinney's Hinged Hanger Rail 3/4  
foot, 11¢..... 50¢  
McKinney's None Better..... ft. 3¢  
McKinney's Standard..... ft. 4¢  
Myer's Stayon Track..... 50¢@10¢  
Smith's Wrought Bracket, Plain..... 34¢  
Smith's Special..... 50¢  
Smith's Ever Jump, per ft. 11¢..... 50¢  
Smith's Plain Steel..... 30¢  
Smith's Milled Steel..... 44¢  
Stowell's Steel Rail, Plain..... 1 1/2¢  
Stowell's Wrought Bracket, Plain..... 34¢  
Sweet's Hylor, per ft. 11¢..... 50¢@10¢  
Sweet's P. L. B. Steel Rail, 100 ft. \$8.00

## Rakes—

**Net Prices, Mailable Rakes:**  
10 12 14 16-tooth  
Shank..... \$1.50 1.60 1.75 1.85  
Socket..... \$1.05 1.10 1.25 1.30  
Steel, August 1, 1899, List..... 70¢@5¢20¢  
Malleable..... 70¢@10¢75¢55¢  
Lawn Rak s, Metal Head, per doz.  
24 t-e-th..... \$3.50@3.75  
Fort Madison Red Head Lawn..... \$3.25  
Fort Madison Blue Head Lawn..... \$3.00  
Jackson Lawn, 20 and 30 teeth, per doz. \$4.00  
Kohler's:  
Lawn Queen, 20-tooth, per doz..... \$3.45  
Lawn Queen, 24-tooth, per doz..... \$3.60  
Paragon, 20 tooth, per doz..... \$2.75  
Paragon, 24 tooth, per doz..... \$3.10  
Steel Garden, 14-tooth, per doz..... \$2.90  
Mallenbach Garden, 14-tooth, per doz. \$2.40

## Rasps, Horse—

Dieston's..... 75¢  
Heller Bros..... 70¢@5¢70¢10¢55¢  
McCaffrey's American Standard..... 60¢@10¢55¢  
New Nicholson..... 60¢@10¢55¢  
See also Files.

## Razors—

Boracic..... 10¢@10¢  
Fox Razors, doz. \$20.00..... 10¢  
Fox Razors, No. 44, per doz. \$20.00..... 10¢  
Fox Razors, No. 82, Platina, per doz. 10¢  
Red Devil..... 60¢  
Silberstein:  
Carl Magnetic..... \$8.00  
Griffon, No. 60..... \$15.00  
Griffon, No. 60..... \$12.00  
All other Razors..... 40¢  
Safety Razors..... 40¢

## Safety Razors—

New Gem, in Tin Boxes..... per doz. \$12.00  
New Gem, Extra Blades..... per doz. \$8.35  
Gem Outfits (Razor, Strop, etc.)..... per doz. \$5.60  
Complete Razor, extra Blade in Leather  
Case..... per doz. \$21.00

**Reels— Fishing—**  
Bishop's Independent Fish Reel Spooler,  
per doz..... \$80.00  
Hendryx:  
M. G. Q. R. A. B. B. M. D. 4008, Silver  
Rubber Populo, Ni-keled Populo,  
Aluminum, German Silver, Bronze,  
3 1/4 in., 6 N., 4 N. to 8 P.N., 33¢  
6 R.W., 102 P and R.N., 202 P and P.N., 40¢  
9.9..... 20¢  
24 N. to 25 P.N..... 35¢@10¢  
124 N., 974 P.N., 002004 P.N., 1020 R.  
and P.R.N., 202 P and P.N..... 50¢  
5009 P and N..... 50¢  
2004 P..... 50¢@10¢55¢  
2004 P.N..... 60¢  
0024 N..... 40¢@10¢  
02084 N..... 45¢@12¢@5¢  
Single Action Trout..... 40¢@10¢  
96 P.N. 802 and 802 N..... 30¢@10¢  
Competitor, 301 and 304 P.N..... 35¢  
00304 P and P.N..... 40¢@5¢  
Safety and Salmon..... 30¢

**Registers—List Sept. 2, 1901.**  
Black Jap..... 7¢@10¢  
White Jap..... 7¢@10¢  
Bronzed..... 7¢@10¢  
Nickel Plated..... 7¢@10¢  
Electro Plated..... 7¢@10¢

There is a good deal of irregularity in  
prices of Registers.

**Registers, Cash—**  
Sun, No. 10, Metal Cabinet..... \$30.00  
Sun, No. 10, Wood Cabinet..... \$25.00

**Revolvers—**  
Single Action..... \$5¢@10¢  
Double Action, except 44 cal. \$1.40@1.60  
Double Action, 44 caliber. \$1.75@1.95  
Automatic..... \$3.25@3.50  
Hammerless..... \$3.75@4.10

**Riddles, Grain or Sand—**  
16 in., per doz..... \$2.75@3.00  
17 in., per doz..... \$3.00@3.25  
18 in., per doz..... \$3.25@3.50

**Rings and Ringers—**  
**Bull Rings—**  
Steel..... \$0.70 0.75 0.80 doz.  
Copper..... 1.00 1.10 1.35 doz.

**Hog Rings and Ringers—**  
Hill's Rings..... gro. boxes, \$4.50@4.75  
Hill's Ringers, Gray Iron, doz. 55¢@1.00  
Hill's Ringers, Mal. Iron, doz. 75¢@80¢  
Hill's Ringers..... per gro. \$5.00@5.25  
Blair's Ringers..... per doz. \$0.60@.65  
Brown's Rings..... per gro. \$5.50@5.75  
Brown's Ringers..... per doz. \$0.75@1.00

**Rivets and Burrs—**  
Copper..... 50¢@10¢50¢10¢5¢  
Iron or Steel:  
Tinners..... 75¢@75¢10¢  
Miscellaneous..... 75¢@75¢10¢

**Rollers—**  
Acme, Stowell's Anti-Friction..... 50¢  
Barn Door, Sargent's list..... 60¢  
Cronk's Stay..... 60¢  
Cronk's Brinkerhoff..... 60¢  
Lane's Stay..... 33¢@5¢  
Stowell's Barn Door Stay..... per doz. \$1.25

**Rope—**  
Manila, 7-16 in. and larger,  
tarred or untarred..... lb. 11 @ 12 c  
Manila, 3/4-inch..... lb. 11 1/4 @ 12 1/4 c  
Manila, 1/2 and 5-16 in..... lb. 12 1/4 @ 13 c  
Manila, Hay, Hide and  
Bale Ropes, Medium and  
Coarse..... lb. 12 @ 12 1/4 c  
Sisal, 7-16 in. and larger lb. 9 @ 10 c  
Sisal, 3/4-inch..... lb. 9 1/4 @ 10 1/4 c  
Sisal, 1/2 and 5-16 inch..... lb. 10 @ 11 c  
Sisal, Hay, Hide and  
Bale Ropes, Medium  
and Coarse..... lb. 9 @ 10 c  
Sisal, Tarred, Medium  
Lath Yarn..... lb. 3 1/4 @ 3 1/4 c  
Cotton Rope:  
Best..... 3/4-in. and larger, lb. 13 1/4 c  
Medium..... 3/4-in. and larger, lb. 11 c  
Com..... 3/4-in. and larger, lb. 9 c  
Jute Rope:  
Thread No. 1, 3/4-in. and up, lb. 6 1/4 c  
Thread No. 2, 3/4-in. and up, lb. 6 c  
Yarn, 3/4-in. and up, lb. 5 @ 5 1/4 c  
Old Colony Manila Transmission Rope..... lb. 17 1/2 c

**Wire Rope—**  
Galvanized..... 40¢@5¢  
Plain..... 45¢@5¢

**Ropes, Hammocks—**  
Covert Mfg. Co.:  
Jute..... 40¢@5¢  
Sisal..... 30¢  
Covert Saddle Works..... 60¢@5¢

**Rules—**  
Boxwood..... 60¢@10¢60¢10¢5¢  
Ivory..... 35¢@10¢35¢10¢5¢  
Chapin-Stephens Co.:  
Boxwood..... 60¢@10¢  
Ivory..... 35¢@10¢  
Miscellaneous..... 50¢@10¢  
Combination..... 55¢@55¢10¢  
Stationers..... 10¢@10¢10¢  
Lufkin's Steel..... 50¢@10¢  
Lufkin's Lumber..... 60¢@10¢  
Stanley R. & L. Co.:  
Boxwood..... 60¢@10¢  
Ivory..... 35¢@10¢  
Upon Nut Co.:  
Boxwood..... 60¢@10¢  
Ivory..... 35¢@10¢35¢10¢10¢

**Sash Locks—See Locks, Sash.**

**Sash Weights—**  
See Weights, Sash.

**Sausage Stuffers or Fillers**  
—See Stuffers or Fillers, Sausage.

**Saw Frames—See Frames, Saw**

**Saw Sets—See Sets, Saw.**

**Saw Tools—See Tools, Saw.**

**Saws—**

Atkins:  
Circular..... 50¢@50¢10¢  
Band..... 50¢@10¢60¢  
Cross Cuts..... 35¢@5¢  
Mulay, Mill and Drag..... 50¢@10¢  
One-Man Saw..... 40¢  
Wood Saws..... 40¢  
Hand, compass, &c..... 40¢  
Chapin-Stephens Co.:  
Turning Saws and Frames..... 30¢@30¢10¢  
Diamond Saw & Stamping Works:  
Sterling Kitchen Saws..... 25¢

Disston's:  
Circular, Solid and Inserted Tooth..... 50¢  
Band, 3 to 14 in. wide..... 60¢  
Band, 1/4 to 2 1/4..... 70¢  
Crosscuts..... 45¢  
Narrow Crosscuts..... 50¢  
Mulay, Mill and Drag..... 50¢  
Framed Wood Saws..... 30¢@10¢  
Wood Saw Blades..... 35¢  
Wood Saw Rods..... 25¢  
Hand Saws, Nos. 12, 99, 9, 16, d100,  
Ds, 120, 79, 77, 8..... 25¢  
Hand Saws, Nos. 7, 07, 107, 9, 1..... 30¢  
Compass, Keyhole, &c..... 25¢  
Butcher Saws and Blades..... 35¢  
C. E. Jennings & Co.'s:  
Back Saws..... 25¢@10¢  
Butcher Saws..... 30¢@10¢  
Compass and Key Hole Saws..... 35¢@5¢10¢  
Framed Wood Saws..... 30¢@10¢  
Hand Saws..... 30¢@10¢  
Wood Saw Blades..... 30¢@10¢  
Mills Saws:  
Butcher Saws..... 15¢@10¢  
Star Saw Blades..... 15¢@10¢

Face:  
Circular and Mill..... 50¢  
Cross Cuts, list Jan. 1, '99..... 50¢  
Hand, Panel and Rip..... 30¢  
Richardson:  
Circular and Mill..... 50¢  
Hand, &c..... 30¢  
X Cuts, list Jan. 1, '99..... 50¢  
Simonds:  
Circular Saws..... 50¢  
Crescent Ground Cross Cut Saws..... 35¢  
One-Man Cross Cuts..... 40¢@10¢  
Gang Mill, Mulay and Drag Saws..... 50¢  
16 in. Saws..... 30¢  
Back Saws..... 25¢@7 1/2¢  
Butcher Saws..... 35¢@35¢7 1/2¢  
Hand Saws..... 25¢@7 1/2¢  
Han I Saws, Bay State Brand..... 45¢  
Compass, Keyhole, &c..... 25¢@25¢7 1/2¢  
Wood Saws..... 35¢@35¢7 1/2¢

**Hack Saws—**  
Atkins' Hack Saw Blades A A A..... 30¢  
Disston:  
Concave Blades..... 25¢  
Keystone..... 40¢  
Hack Saw Frames..... 30¢  
Fitchburg File Works, The Best..... 25¢  
C. E. Jennings & Co.'s:  
Hack Saw Frames, Nos. 175, 180..... 35¢@5¢10¢  
Hack Saws, Nos. 175, 180, complete..... 35¢@5¢10¢  
Griffin's Hack Saw Frames..... 35¢@5¢10¢  
Griffin's Hack Saw Blades..... 35¢@5¢10¢  
Star Hack Saws and Blades..... 15¢@10¢  
Sterling Hack Saw Blades..... 25¢  
Sterling Hack Saw Frames..... 20¢

**Scroll—**  
Barnes' No. 7, \$15..... 25¢  
Barnes' Scroll Saw Blades..... 40¢  
Barnes' Velocipede Power Scroll Saw,  
without boring attachment, \$20..... 20¢  
Lester, complete, \$10.00..... 15¢@10¢  
Rogers, complete, \$4.00..... 15¢@10¢

**Scalers, Fish—**  
Rishop's Lightning..... per doz. \$3.40  
Covert's Saddlery Works..... 6¢@10¢

**Scales—**  
Family, Turnbull's..... 30¢@30¢10¢  
Counter:  
Hatch, Platform, 1/2 to 20 lbs. doz. \$5.50  
Two Platform, 1/2 to 8 lbs. doz. \$15  
Union Platform, Plain..... \$1.70@1.90  
Union Platform, Striped \$1.85@2.15  
Chattillon:  
Eureka..... 25¢  
Favorite..... 40¢  
Grocers' Trip Scales..... 30¢  
Pelouze Scales—Household, Counter,  
Candy, Ice, Postal, Computing..... 50¢  
"Standard" Portables..... 45¢  
"The Standard" R. R. and Wagon..... 50¢

**Scrapers—**  
Box, 1 Handle..... doz. \$2.25@2.50  
Box, 2 Handle..... doz. \$3.00@3.50  
Ship Light, \$2.50; Heavy, \$4.00  
Adjustable Box Scraper (S. R. & L. Co.)  
\$6.00..... 30¢@30¢10¢  
Chapin-Stephens Co., Box..... 50¢@50¢10¢

**Screens, Window, and Frames—**  
Flyer Pattern Window Screen..... 60¢@60¢5¢  
Waine Window Screen Frames..... 40¢@10¢  
Perfection Window Screens..... 60¢@60¢5¢  
Phillips' Window Screen Frames..... 60¢@5¢  
Porter's:  
Fairview Window Screens..... 60¢@60¢5¢2¢  
Hummer Window Screens..... 60¢@60¢5¢2¢  
Klondike Window Screens..... 60¢@60¢5¢2¢  
See also Doors.

Hindustan No. 1, Regular.... 7 1/2 8 1/2  
Hindustan No. 1, Small..... 7 1/2 10 1/2

|   |        |     |
|---|--------|-----|
| Hindstone No. 1 Small.....                        | 10¢    |     |
| Axe Stones (all kinds).....                       | 30¢    | 40¢ |
| Turkey Oli Stones, ex. 5 to in.....               | 30¢    |     |
| Queer Creek Stones, 4 to 8 in.....                | 30¢    |     |
| Queer Creek Slips.....                            | 30¢    |     |
| Sand Stone.....                                   | 5¢     |     |
| Belgian, German and Swaty Razor<br>Hones.....     |        | 50¢ |
| Natural Grit Carving Knife Hones,<br>1/2 doz..... | \$3.00 |     |
| Quick Edge Pocket Knife Hones,<br>1/2 doz.....    | \$3.00 | 40¢ |
| Mounted Kitchen Sand Stone, 1/2<br>doz.....       | \$1.50 |     |

**Stoners- Cherry-**

Enterprise.....25@30%

**Stops Bench—**

Millers Falls.....15&10%

Morrill's 3 dog. No. 1 \$10.00.....50%

Morrill's, No. 2, \$12.50...

**Door—**  
Chapin-Stephens Co.....60@60&10%

Plane—  
Chapin-Stephens Co.

**Straps— Box—**  
Cory's Universal, case lots, . . . . . 20@10%

### Home- Covert's Saddlery Works

**Stretchers, Carpet—**  
Cast Iron, Steel Points...doz. 55@60¢  
Socket.....doz. \$1.75

**Stuffers, Sausage—**  
Enterprise Mfg. Co.....25@25¢&71¢  
National Specialty Mfg. Co., list Jan.  
1, '07.....30¢

**Supports, Bench—**

### Supports, Porch—

Hoffman's Porch Supports....#

**Sweepers, Carpet—**

|                                 |          |
|---------------------------------|----------|
| National Sweeper Co. :          | Per doz. |
| Marion, Roller Bearing, regular |          |
| finishes, full Nickel.....      | \$24.00  |

Marlon Queen, Roller Bear!  
Fancy Veneers, full Nickel...

Monarch, Roller Bearing, Nickel...\$22.00  
Monarch, Roller Bearing, Jap'ned...\$20.00  
Marion Queen, Roller Bearing, Reg-  
ular Finish, full Nickel...\$24.00

Transparent, Roller Bearing, Plate  
Glass Top, Nickel \$29.00

|                                       |         |
|---------------------------------------|---------|
| Grass 100, Nickel Roller Bearing,     | \$32.00 |
| Monarch Extra Roller Bearing,         | \$36.00 |
| 17-inch case), Nickel                 |         |
| Monarch Extra Roller Bearing (17-     |         |
| inch case), Japanned,                 | \$33.00 |
| Perpetual, Regular Bearings, Nk.      | \$20.00 |
| Perpetual, Regular Bearings, Jap.     | \$14.00 |
| NOTE.—Discount of 50c per dozen on    |         |
| three-dozen lots. Discount of \$1 per |         |
| dozen on five-dozen lots.             |         |

**Tacks Brads, &c.—**

*List Jan. 15, '99.*  
*Group at Truckee, American*

|                                  |                 |   |
|----------------------------------|-----------------|---|
| Carpet Tacks, American           | 90¢ 25¢ 50¢     | 1 |
| American Cut Tacks, 90¢ 30¢ 50¢  | 90¢ 30¢ 50¢     | 1 |
| Swedes Iron Tacks, 90¢ 30¢ 50¢   | 90¢ 30¢ 50¢     | 1 |
| Swedes Upholsterers' Tacks       | 90¢ 41¢ 10¢ 50¢ | 1 |
| Gimp Tacks                       | 90¢ 45¢ 50¢     | 1 |
| Lace Tacks                       | 90¢ 40¢         | 1 |
| Trimmers' Tacks, 90¢ 30¢ 19¢ 50¢ | 90¢ 30¢ 19¢ 50¢ | 1 |
| Looking Glass Tacks, 70¢ 10¢     | 70¢ 10¢         | 1 |
| Bill Posters' and Railroad Tack  | 90¢ 45¢ 50¢     | 1 |
| Hungarian Nails                  | 80¢ 20¢ 50¢     | 1 |

Common and Patent Brads...  
 Thumb and Clout Nails... 20¢

**Tank and Cloot Nails,** .80¢<sup>ea</sup>. ... %  
*(No new prices are for)*  
**Straight Weights**, and extra 10 & 5% given  
**Star Weights\*\***, and an extra 10 & 5% on  
Standard Weights.\*\*  
**Miscellaneous—**  
Double Point Brad Tacks...50 and 5 tens  
Steel Wire Brads, E. & E. Mfg. Co.'s list,  
  30 & 10¢6%

**See also Nails, Wire.**

**Tanks, Oil—**

|                              |         |        |
|------------------------------|---------|--------|
| Emerald, S. S. & Co., .....  | 30-gal  | Each.  |
| Emerald, S.S. & Co., .....   | 60-gal. | \$3.40 |
| Queen City S.S. & Co., ..... | 30 gal. | \$4.25 |
|                              |         | \$3.65 |

Queen City S. S. & Co., 60-gal....

**Tapes, Measuring—**  
*American Asses' Skin*.....40¢10@50¢  
*Patent Leather*.....25¢30¢5¢  
*Steel*.....40¢40¢5¢  
*Charmant's*.....

Keuffel & Esser Co., Steel and Me

|                        |              |
|------------------------|--------------|
| Lower list, 1890.....  | 35%          |
| Lufkin's Steel.....    | 33 1/2 @ 35% |
| Lufkin's Metallic..... | 30 @ 30 & 5% |

**Teeth Harrow—**  
*Steel Harrow Teeth, plain or headed,*  
 5/8-inch and larger, per 100 lbs. \$3.00

### Thermometers—

**Ties, Bale—Steel Wire.**  
*Single Loop*.....80¢10@80¢10¢5¢  
*Monitor, Cross Head, Etc.*.....70¢

**Ties, Wall-**

**Clleveland Wire Spring Co.:**  
Galv. Steel 5-32 x 6½ in. 1000. \$10.00  
Galv. Steel 5-32 x 8½ in. 1000. \$11.00  
Galv. Steel 5-32 x 11½ in. 1000. \$12.00  
Galv. Steel 5-32 x 15½ in. 1000. \$14.00

**Tinners' Shears, &c.—**  
See *Shears, Tinners', &c.*

**Pinware—**  
Stamped, Japanned and Pieced

**Tips, Safety Pole—**  
Covert's Saddlery Works.....60&10%  
**Tire Benders, Upsetters,**  
**&c.—See Benders and Upset-**  
**ters, Tire.**

**Tools—Coopers'—**  
L. & I. J. White ..... 20@20¢55  
**Hay—**  
Myers' Hay Tools ..... 30%  
**Saw—**  
Atkins' Cross Cut Saw Tools ..... 40%  
Simonds' Improved ..... 33%  
Simonds' Crescent ..... 25%  
**Sho—**  
L. & I. J. White ..... 25%

**Transom Lifters—**  
See Lifters, Transom.  
**Traps—**  
Fly—

Balloon, Globe or Acme .....  
doz. \$1.15 to 1.25; gro. \$11.50 to 12.00  
Harper, Champion or Paragon .....  
doz. \$1.25 to 1.40; gro. \$13.00 to 13.50

**Game—**  
Oneida Pattern ..... 80@80¢55  
Newhouse ..... 45@45¢55  
Hawley & Norton ..... 65¢55@1.05  
Victor (Oneida Pattern) ..... 75¢55@1.05  
Star (Blake Pattern) ..... 60¢55@1.05

**Mouse and Rat—**  
Mouse, Wood, Choker, doz. holes ..... 8% @ 9¢  
Mouse, Round or Square Wire ..... doz. 85¢ @ 90¢

**Marty French Rat and Mouse Traps**  
(genuine):  
No. 1, Rat, Each \$1.12½; doz. \$12.00  
No. 3, Rat, doz. \$6.00; case of 50 ..... \$25.25 doz.

No. 3½, Rat, doz. \$4.75; case of 72 ..... \$1.25 doz.  
No. 4, Mouse, doz. \$3.50; case of 7 ..... \$2.75 doz.

No. 5, Mouse, doz. \$2.75; case of 150 ..... \$2.25  
Schuyler's Rat Killer, No. 1, per doz. \$30.00  
No. 2, per doz. \$30.00; Mouse, No. 3, \$18.00

J. M. Mast Mfg. Co., per doz. \$50%  
Mouse, Rat.  
Blizzard ..... No. 12, \$3.00 No. 1, \$9.50  
Old Nick ..... No. 30, 2.22 No. 2, 8.40

Joker ..... No. 5, 2.10 No. 8, 8.40  
Imp'd Snap Shot, Mouse, per gro., 2 holes, \$2.40  
Imp'd Snap Shot, Mouse, per gro., 4 holes, \$4.20

**Trimmers Spoke—**  
Bonney's Nos. 1 and 2 ..... 40%  
Wood's No. 1 ..... 30%

**Trowels—**  
Diston Brick and Pointing ..... 30%  
Diston Plastering ..... 25%  
Diston "Standard Brand" and Garden Trowels ..... 35%  
Kohler's Steel Garden Trowels, 3 in., per gro. \$5.00

Kohler's Steel Garden Trowels, 6 in., per gro. \$6.00  
Never-Break Steel Garden Trowels, 6 in., per gro. \$6.00  
Peace's Plastering ..... 30%  
Rose Brick and Plastering ..... 25%  
Woodrough & McParlin, Plastering ..... 25%

**Trucks, Warehouse, &c.—**  
B. & L. Block Co.:  
New York Pattern ..... 50¢ @ 10%  
Western Pattern ..... 60¢ @ 10%  
Handy Trucks ..... per doz. \$16.00  
Grocery ..... per doz. \$15.00  
Daisy Stove Trucks, Improved pattern, doz. \$18.50  
Model Stove Trucks ..... doz. \$18.50

**Tubs, Wash—**  
Galvanized, per doz. \$4.75 5 25 6.00  
Galvanized Wash Tubs (S. S. & Co.):  
No. 1 2 3 10 20 30  
Per doz. \$5.25 6.00 6.75 6.50 7.00 8.00

**Twine—Miscellaneous—**  
Flax Twine—BC B.  
No. 9, ¼ and ½ lb. Balls 21½¢ 23½¢  
No. 12, ¼ and ½ lb. balls 17½¢ 19½¢  
No. 18, ¼ and ½ lb. balls 15½¢ 17½¢  
No. 24, ¼ and ½ lb. balls 15 c 17 c  
No. 36, ¼ and ½ lb. balls 14½¢ 16½¢  
Chalk Line, Cotton, ¼ lb. Balls ..... 22@22½¢

Cotton Mops, 6, 9, 13 and 15 lb. to doz ..... 8¢  
Cotton Wrapping 5 Balls to lb ..... 11¢ @ 17¢  
American 2-Ply Hemp, ¼ and ½ lb. Balls ..... 15¢ @ 14¢  
American 3-Ply Hemp, 1-lb. Balls ..... 15¢ @ 14¢

India 2-Ply Hemp, ¼ and ½ lb. Balls (Spring Twine) ..... 3¢  
India 3-Ply Hemp, 1-lb. Balls ..... 8¢  
India 3-Ply Hemp, 1½-lb. Balls ..... 7¢  
2, 3, 4 and 5-Ply Jute, ½-lb. Balls ..... 8¢ @ 6¢

Mason Line, Linen, ½-lb. Balls ..... 45¢  
No. 26½ Mattress, ¼ and ½ lb. Balls ..... 37¢  
Wool, 3 to 6 ply ..... 5¢ @ 5½¢

**Blinder—**  
Sisal ..... 10½¢  
Standard ..... 10½¢  
Standard Manila (550 ft.) ..... 11  
Manila (600 ft.) ..... 12  
Pure Manila (650 ft.) ..... 12½¢  
F. O. B. Eastern Mill. Carload lots ¼ cent less.

**Vises—**  
Solid Box ..... 50¢ @ 10¢ 50¢ @ 10¢ 50¢  
**Parallel—**  
Athal Machine Co.:  
Simpson's Adjustable ..... 40%  
Standard ..... 40%  
Amateur ..... 40%  
Bonney's ..... 40%  
Columbian Hdw Co ..... 40%  
Emmert Universal ..... 40%  
Pattern Makers' No. 1 ..... \$15.00 net  
Pattern Makers' No. 2 ..... \$13.00 net  
Machineist and Tool Makers' ..... \$15.00 net  
Fisher & Norris Double Screw ..... 15¢ @ 10%  
Holland's ..... 40%  
Machineist's ..... 40%  
Keystone ..... 40%  
Lewis Tool Co. ..... 30¢ @ 30%  
Merrill's ..... 20%  
Miller's Falls ..... 50¢ @ 10¢ 50¢

Parker's ..... 20¢ @ 25%  
Regulars ..... 20¢ @ 25%  
Vulcan's ..... 40¢ @ 45%  
Combination Pipe ..... 55¢ @ 60%  
Prentiss ..... 20¢ @ 25%  
Sargent's ..... 40%  
Smith & Hemenway Co.:  
Machineist's ..... 40%  
Jewelers ..... 30%  
Snediker's X. L. ..... 33%  
Stephens' ..... 33%

**Saw Filers—**  
Bonney's, No. 1, \$13; No. 3, \$6 50¢ @ 5%  
Diston's D 3 Clamp and Guide, doz. \$30 ..... 25%  
Reading ..... 60%  
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 ..... 45¢ @ 50%

**Wood Workers'—**  
Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.

**Miscellaneous—**  
Bignall & Keeler Combination Pipe Vise ..... 60%  
Parker's Combination Pipe Vise ..... 60%  
187 Series ..... 60%  
No. 870 ..... 40%

**Wads—Price Per M.**  
B. E., 11 up ..... 60¢  
B. E., 9 and 10 ..... 70¢  
B. E., 8 ..... 80¢  
B. E., 7 ..... 80¢  
P. E., 11 up ..... \$1.00  
P. E., 9 and 10 ..... 1.25  
P. E., 8 ..... 1.50  
P. E., 7 ..... 1.50  
Ely's B. E., 11 and larger ..... \$1.70 @ 1.75  
Ely's P. E., 12 to 20 ..... \$3.00 @ 3.25

**Ware, Hollow—**  
Cast Iron, Hollow—  
Stove Hollow Ware:  
Ground ..... 5¢ @ 10¢ @ 60¢  
Unground ..... 5¢ @ 55¢ @ 65¢  
White Enamelled Ware:  
Maslin Kettles ..... 70%  
Covered Ware:  
Tinned and Turned ..... 40%  
Enamelled ..... 50%  
See also Pots Glue.

**Enamelled—**  
Agate Nickel Steel Ware, list Nov. 1, '01 ..... 50¢ @ 10%  
Iron Clad Ware ..... 70¢ @ 10%  
Lava, Enamelled ..... 40¢ @ 10%  
Never Break Enamelled ..... 50%

**Tea Kettles—**  
Galvanized Tea Kettles:  
Inch 6 7 8 9  
Each ..... 55¢ 50¢ 45¢ 65¢

**Steel Hollow Ware.**  
Avery Spiders & Griddles ..... 65¢ @ 65¢ 55%  
Avery Kettles ..... 90%  
Porcelainized ..... 50¢ @ 50¢ 10%  
Never Break Spiders and Griddles ..... 65¢ @ 55%

**Never Break Kettles.** ..... 60%  
Solid Steel Spiders & Griddles ..... 65¢ @ 51%  
Solid Steel Kettles ..... 60%

**Warmers, Foot—**  
Pike Mfg. Co., Sole, Stone ..... 40¢ @ 40¢ 10%

**Washboards—**  
Solid Zinc ..... 50¢  
Crescent, family size, bent frame, \$3.00  
Red Star, family size, stationary protector ..... \$3.00

**Double Zinc Surface:**  
Saginaw Globe, family size, stationary protector ..... \$2.65  
Cable Cross, family size, stationary protector ..... \$2.90

**Single Zinc Surface:**  
Nalad, family size, open back perforated ..... \$2.40  
Saginaw Globe, protector, family size, ventilated back ..... \$2.25

**Brass Surface:**  
Brass King, Single Surface, open back ..... \$3.00  
Nickel Plate Surface:  
No. 1001 Nickel Plate, Single Surface ..... \$3.00

**Washers—**  
Leather, Axle—  
Solid ..... 35¢ @ 10¢ @ 55¢ @ 10¢ 10%  
Patent ..... 35¢ @ 10¢ @ 55¢ @ 20%  
Coil: ¾ 1 1½ 1¾ Inch ..... 10¢ 11¢ 12¢ 18¢ per box

**Iron or Steel—**  
Size bolt 5-16 ¾ 1 1½ 1¾ 3/4  
Washers ..... \$1.80 5.50 4.60 4.40 4.20  
In lots less than one keg add 1¢ per lb., 5-lb. boxes add 1¢ to list.

**Cast Washer—**  
Over ½ inch, barrel lots, per lb. ..... 1¾ @ 2¢

**Waterers, Hog—**  
Improved Dewey ..... doz \$26.00

**Wedges—**  
Oil Finish ..... lb. 2.50 @ 3.10

**Weights—**  
Hitching—  
Covert's Saddlery Works ..... 60¢ @ 10%  
**Sash—**  
Per ton, f. o. b. factory:  
Eastern District ..... \$26.00  
Western, Central and Southern Districts ..... \$27.00

**Wheels, Well—**  
8-in. \$1.60 @ 1.80; 10-in., \$2.00 @ 2.25;  
12-in., \$2.50 @ 2.65; 15-in., \$4.00 @ 4.25

**Wire and Wire Goods—**  
Bright and Annealed:  
6 to 9 ..... 72½¢ @ 72½¢ @ 10%  
10 to 18 ..... 72½¢ @ 10¢ @ 72½¢ @ 5%  
19 to 36 ..... 75¢ @ 10¢ @ 75¢ @ 10¢ @ 7½%  
27 to 30 ..... 75¢ @ 10¢ @ 75¢ @ 10¢ @ 7½%

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Bright and Annealed:  
6 to 9 ..... 72½¢ @ 72½¢ @ 10%  
10 to 18 ..... 72½¢ @ 10¢ @ 72½¢ @ 5%  
19 to 36 ..... 75¢ @ 10¢ @ 75¢ @ 10¢ @ 7½%  
27 to 30 ..... 75¢ @ 10¢ @ 75¢ @ 10¢ @ 7½%

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**Weights—**  
Hitching—  
Covert's Saddlery Works ..... 60¢ @ 10%  
**Sash—**  
Per ton, f. o. b. factory:  
Eastern District ..... \$26.00  
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**Wheels, Well—**  
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12-in., \$2.50 @ 2.65; 15-in., \$4.00 @ 4.25

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Bright and Annealed:  
6 to 9 ..... 72½¢ @ 72½¢ @ 10%  
10 to 18 ..... 72½¢ @ 10¢ @ 72½¢ @ 5%  
19 to 36 ..... 75¢ @ 10¢ @ 75¢ @ 10¢ @ 7½%  
27 to 30 ..... 75¢ @ 10¢ @ 75¢ @ 10¢ @ 7½%

**Waterers, Hog—**  
Improved Dewey ..... doz \$26.00

**Wedges—**  
Oil Finish ..... lb. 2.50 @ 3.10

**Weights—**  
Hitching—  
Covert's Saddlery Works ..... 60¢ @ 10%  
**Sash—**  
Per ton, f. o. b. factory:  
Eastern District ..... \$26.00  
Western, Central and Southern Districts ..... \$27.00

**Galvanized:**  
6 to 18 ..... 70¢ @ 70¢ 5%  
19 to 36 ..... 72½¢ @ 50¢ 72½¢ @ 10%  
27 to 30 ..... 72½¢ @ 10¢ @ 72½¢ @ 10%  
**Coppered:**  
6 to 9 ..... 70¢ @ 70¢ 10%  
10 to 18 ..... 70¢ @ 70¢ 10% 5%  
19 to 36 ..... 75¢ @ 75¢ 10¢ @ 2½¢  
27 to 30 ..... 75¢ @ 10¢ @ 75¢ 10¢ 5%

**Tinned:**  
6 to 15 ..... 75¢ @ 75¢ 7½¢  
15 to 18 ..... 72½¢ @ 70¢ 7½%  
19 to 36 ..... 70¢ @ 70¢ 5% 5%  
27 to 30 ..... 70¢ @ 70¢ 5%

**Annealed Wire on Spools—**  
70 to 70¢ 5%  
Brass and Copper Wire on Spools ..... 60¢ @ 60¢ 5%

**Brass, list Feb. 26, '96.** ..... 20¢ @ 30%  
Copper, list Feb. 26, '96 ..... 15%  
Cast Steel Wire ..... 50%  
Stub's Steel Wire ..... \$6.00 to \$2. 50%  
Wire Clothes Line, see Lines.  
Wire Picture Cord, see Cord.

**Bright Wire Goods—**  
List April 1, 1901 ..... 85¢ @ 10¢ @ 10%  
**Wire Cloth and Netting—**  
Galvanized Wire Netting ..... 50¢ @ 10%  
Painted Screen Cloth per 100 ft. \$1.15  
Light Hardware Grade  
2-8 Mesh, Plain (Sc. list) sq. ft. .... 1¼ @ 2¢  
2-8 Mesh, Galv. (Sc. list) sq. ft. .... 2¼ @ 2½¢

**Wire, Barb—See Trade Report.**  
**Wrenches—**  
Agricultural ..... 80¢ @ 80¢ 10%  
Baxter Pattern S Wrenches ..... 70¢ @ 70¢ 10%  
Drop Forged S ..... 70¢ @ 70¢ 10%  
Aene ..... 60¢ @ 10%  
Alligator ..... 70%  
Alligator Pattern ..... 70%  
Bull Dog ..... 70%  
Bonis & Caul's ..... 35%  
Adjustable S ..... 35%  
Adjustable S Pipe ..... 40%  
Briggs' Pattern ..... 30¢ @ 10%  
Combination Black ..... 40¢ @ 5%  
Combination Bright ..... 40%  
Cylinder or Gas Pipe ..... 55%  
Extra Heavy ..... 45%  
Merrick's Pattern ..... 50%  
No. 3 Pipe, Bright ..... 55%  
Boardman's ..... 33%  
Co's Genuine ..... 40¢ @ 10¢ 5%  
Co's "Mechanics" ..... 40¢ @ 10¢ 5%  
Donohue's Engineer ..... 40¢ @ 10%  
Dudley Auto ..... 50¢ @ 50¢ 10%  
Eagle ..... 50¢ @ 10%  
Elgin Wrenches ..... 40%  
Elgin Monkey Wrench Pipe Jaws ..... 33%  
Etem Pocket ..... 30%  
Hercules ..... 70%  
W. & B. Machinist ..... 50¢ @ 10%  
Case lots ..... 50¢ @ 10%  
Less than case lots ..... 50% 5%  
Improved Pipe (W & B) ..... 60%  
Solid Handles, P. S. & W ..... 50¢ @ 50¢ 5%  
Strilsson ..... 65%  
Triumph ..... 60¢ @ 10%  
Vulcan Chain ..... 50%

**Fruit Jar—**  
Triumph Fruit Can Wrenches .....  
Syrup Cap Wrenches ..... per gro. \$19.20  
T & B Fruit Jar Wrenches, 2 gro. \$16.50  
T & B Fruit Jar Holders ..... per gro. \$30.00

**Wrought Goods—**  
Staples, Hooks, &c., list March 17 '92 ..... 30¢ @ 30¢ 5%  
**Yokes Neck—**  
Covert Saddlery Works Trimmed ..... 70%  
Covert Saddlery Works Neck Yokes ..... 70%  
Centers ..... 70%  
**Yokes, Ox, and Ox Bows—**  
Fort Madison's Farmers & Freighters' ..... list net

**Zinc—**  
Sheet ..... lb 7 @ 7¼¢

## PAINTS, OILS AND COLORS.—Wholesale Prices.

### White Lead, Zinc, &c.

Lead, English white, in Oil ..... 7¼ @ 9%  
Lead, American White, in Oil  
Lots of 500 lb or over ..... @ 7¼  
Lots less than 500 lb ..... @ 7¼

Lead, White, in oil, 25 lb tin  
pails, add to keg price ..... @ ¾  
Lead, White, in oil, 12½ lb tin  
pails, add to keg price ..... @ 1

Lead, White, in oil, 1 to 5 lb as-  
sorted tins, add to keg price ..... @ 1¼  
Lead, American, Terms: For lots 12 tons  
and over ¼ rebate; and 25 for cash  
if paid in 15 days from date of invoice;  
for lots of 500 lbs. and over 25 for cash  
if paid in 15 days from date of invoice;  
for lots of less than 500 lbs. net.

Lead White, Dry in bbls. .... 5½ @ 6¼  
Zinc, American, dry ..... 4½ @ 4%  
Zinc, Paris, Red Seal, dry ..... @ ¾  
Zinc, Paris, Green Seal, dry ..... @ ¾  
Zinc, Antwerp Red Seal, dry ..... @ ¾  
Zinc, Antwerp, Green Seal, dry ..... @ ¾  
Zinc, V. M. French, in Poppy Oil,  
Green Seal:

Lots of 1 ton and over ..... 12 @ 12¼  
Lots of less than 1 ton ..... 12¼ @ 13¼  
Zinc, V. M. French, in Poppy Oil,  
Red Seal:

Lots of 1 ton and over ..... 10½ @ 11¼  
Lots of less than 1 ton ..... 11 @ 11¼  
Discounts—V. M. French Zinc.—Dis-  
counts to buyers of 10 bbl. lots of one or  
assorted grades, 1½; 25 bbls. 2½; 50  
bbls. 4½.

**Dry Colors.**  
Black, Carbon ..... 5 @ 10  
Black, Drop, Amer. .... 4 @ 8  
Black, Drop, Eng. .... 3 @ 15  
Black, Ivory ..... 16 @ 20  
Lamp, Com. .... 4½ @ 6  
Blue, Celestial ..... 4 @ 6  
Blue, Chinese ..... 29 @ 32  
Blue, Prussian ..... 27 @ 30  
Blue, Ultramarine ..... 3¼ @ 15  
Brown, Spanish ..... 1 @ 1  
Brown, Vandyke, Amer. .... 1½ @ 2

Brown, Vandyke, Foreign ..... 2¼ @ 3¼  
Carmine, No. 40 ..... 2½ @ 2.50  
Green, Chrome, ordinary ..... 3¼ @ 6  
Green, Chrome, pure ..... 17 @ 25  
Lead, Red, bbls. ½ bbls. and kegs:  
Lots 500 lb or over ..... @ 6¼  
Lots less than 500 lb ..... @ 7¼

Litharge, bbls. ½ bbls. and kegs:  
Lots 500 lb or over ..... @ 6¼  
Lots less than 500 lb ..... @ 7¼  
Ocher, French Washed ..... @ 5  
Ocher, Dutch Washed ..... @ 5  
Ocher, American ..... 10 @ 10.00 @ 13.00

Orange Mineral, English ..... 8¼ @ 9%  
Orange Mineral, French ..... 11 @ 11¼  
Orange Mineral, German ..... 8¼ @ 9%  
Orange Mineral, American ..... 8¼ @ 9%  
Red, Indian, English ..... 4½ @ 8¼  
Red, Indian, American ..... 3 @ 3¼  
Red, Turkey, English ..... 4 @ 6  
Red, Tuscan, English ..... 7 @ 10  
Red, Venetian, Amer. 100 lb ..... 50 @ 1.50  
Red, Venetian, English, 100 lb ..... 1.50 @ 1.75

Sienna, Italian, Burnt ..... 3¼ @ 7¼  
Sienna, Ital., Raw, Powd. .... 3¼ @ 7¼  
Sienna, American, Raw ..... 1¼ @ 2  
Sienna, American, Burnt and  
Powdered ..... 1¼ @ 2

Talc, French ..... 100 lb \$1.25 @ 1.50  
Terra Alba, French ..... 100 lb .95 @ 1.00  
Terra Alba, English ..... .95 @ 1.00  
Terra Alba, American No. 1 ..... .85 @ .85  
Terra Alba, American No. 2 ..... .45 @ .50

Umber, Turkey, Raw & Powd. 2½ @ 3¼  
Umber, Bnt. Amer. .... 1¼ @ 2  
Umber, Raw, Amer. .... 1¼ @ 2  
Yellow, Chrome ..... 11 @ 14  
Vermilion, American Lead ..... 10 @ 40  
Vermilion, Quicksilver, bulk ..... @ 70  
Vermilion, Quicksilver, bags ..... @ 71  
Vermilion, English, Import. .... 80 @ 85  
Vermilion, Chinese ..... \$1.05 @ 1.20

**Colors in Oil.**  
Black, Lampblack ..... 12 @ 14

Blue, Chinese ..... 36 @ 40  
Blue, Prussia ..... 32 @ 36  
Blue, Ultramarine ..... 13 @ 16  
Brown, Vandyke ..... 11 @ 14  
Green, Chrome ..... 10 @ 13  
Green, Paris ..... 12 @ 15  
Sienna, Burnt ..... 12 @ 15  
Sienna, Raw ..... 11 @ 14  
Umber, Raw ..... 11 @ 14  
Umber, Burnt ..... 11 @ 14

**Miscellaneous.**  
Barytes, Foreign, per ton ..... \$19.00 @ 21.00  
Barytes, Amer. floated ..... 18.50 @ 20.00  
Barytes, Crude, No. 1 ..... 9.00 @ 10.00  
Chalk, in bbls ..... per ton 3.25 @ 3.30  
China Clay, English, per ton ..... 11.00 @ 17.00  
Cobalt, Oxide, per 100 lb ..... 2.26 @ 2.50  
Whiting, Common, per 100 lb ..... 4.46 @ .55  
Whiting, Gilders ..... .62 @ .68  
Whiting, extra Gilders ..... .66 @ .72

**Putty.**  
In bladders ..... 13¢ @ 2¼  
In bulk ..... 1¼ @ 3  
In cans 1 lb to 5 lb ..... 2½¢ @ 4¼  
In cans 12 lb to 25 lb ..... 1¼¢ @ 2¼

**Spirits Turpentine.**  
In Southern bbls ..... 49 @ 40½¢  
In machine bbls ..... 49½ @ 50½

**Glue.**  
Cabinet ..... 11¼ @ 14  
Extra White ..... 18 @ 21  
French ..... 12 @ 40  
Irish ..... 13¼ @ 16  
Low Grade ..... 9 @ 12  
Medium White ..... 14¼ @ 18½

**Animal, Fish and Vegeta-**  
**ble Oils.**  
Linseed, City, raw ..... gal. 44 @ 45

Linseed, City, boiled ..... 46 @ 47  
Linseed, State and West'n, raw ..... @ 42  
Linseed, raw Calcutta seed ..... 75 @ 8

